uponor

INDOOR CLIMATE

CLIMATE CONTROLLER C-46

Installation and operation manual

11 | 2010

Contents

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2 Preface

The Uponor Climate Controller installation manual describes how to install and operate the components of the system. Example applications and possible configurations of the system are also included.

2.1 Safety instructions

Warnings used in this manual

The following symbols are used in the manual to indicate special precautions when installing and operating any Uponor equipment:

WARNING!

Risk of injury. Ignoring warnings can cause injury or damage components.

CAUTION

Ignoring cautions can cause malfunctions.

Safety measures

Conform to the following measures when installing and operating any Uponor equipment:

- Read and follow the instructions in the installation and operation manual.
- Installation must be performed by a competent person in accordance with local regulations.
- It is prohibited to make changes or modifications not specified in this manual.
- All power supply must be switched off before starting any wiring work.
- Do not use water to clean Uponor components.
- Do not expose the Uponor components to flammable vapours or gases.
- We cannot accept any responsibility for damage or breakdown that can result from ignoring these instructions!

Power

WARNING!

The Uponor system uses 50 Hz, 230 V AC power. In case of emergency, immediately disconnect the power.

Technical constraints

CAUTION

To avoid interference, keep installation/data cables away from power cables of more than 50 V.

2.2 Limitations for radio transmission

The Uponor system uses radio transmission. The frequency used is reserved for similar applications, and the chances of interference from other radio sources are very low.

However, in some rare cases, it might not be possible to establish perfect radio communication. The transmission range is sufficient for most applications, but each building has different obstacles affecting radio communication and maximum transmission distance. If communication difficulties exist, Uponor can support the system with accessories, such as repeaters, for solving exceptional problems.

2.3 Disposal

The Uponor Control System consists of various recyclable components. Uponor would be grateful if the components (batteries, plastics, and electric or electronic parts) are sorted and disposed of at a suitable recycling centre.

3 Climate Controller C-46 overview

This section is a brief description of the Climate Controller C-46 as a system component and its operating modes.

3.1 Description

The Climate Controller C-46 is a primary controller for heating, cooling and meltaway systems.

Examples of applications are:

- Underfloor heating and cooling systems
- Wall heating and cooling systems
- Ceiling cooling and heating systems
- Radiator heating system
- Meltaway system

Its main function is to regulate supply water temperature by controlling a mixing valve actuator.

Other functions include:

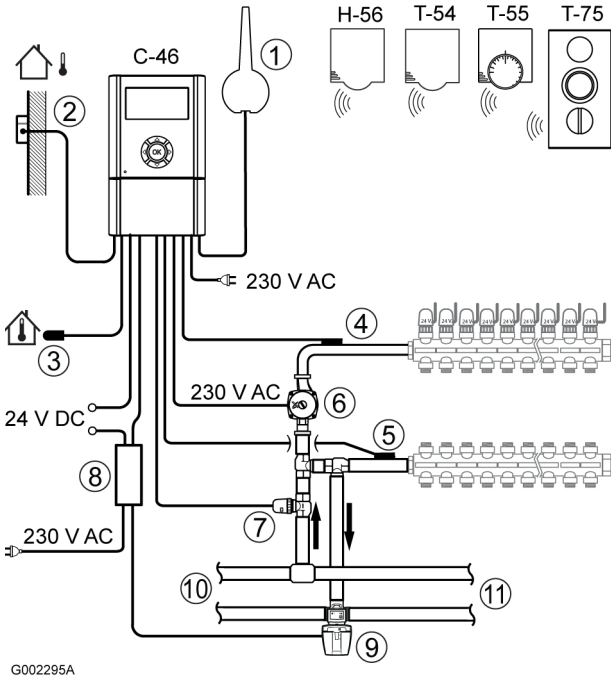
- Circulation pump control
- Output for heating/cooling switchover relay
- Dew point control

3.1.1 Heating and cooling system example

The figure below shows how the Climate Controller C-46 can be set up in a climate system. The figure also shows several system components that can be connected to the Climate Controller C-46. The system can use either wired sensors or radio thermostats.

The figure is applicable for heating, cooling and heating/cooling switchover systems. Some of the components are intended for use with specific system modes as indicated in the table below.

NOTE!
Only Uponor sensors and thermostats should be used in combination with the Climate Controller C-46.

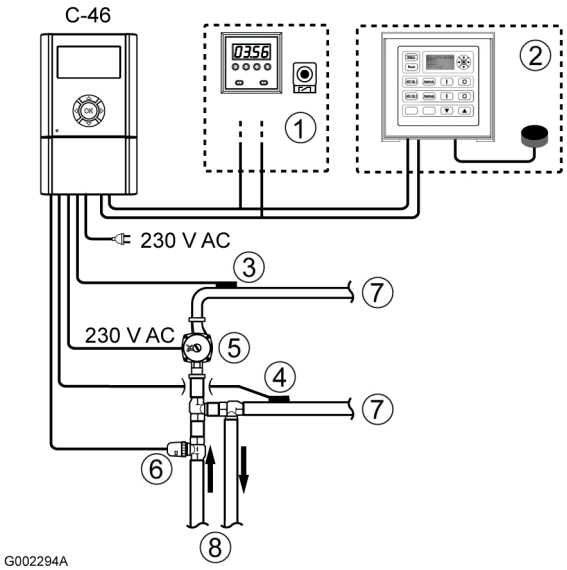


Item	Description
C-46	Climate Controller C-46
H-56	Relative Humidity Sensor H-56 (only used in cooling systems with dew point control)
T-54	Thermostat Public T-54 Radio
T-55	Thermostat T-54 Radio
T-75	Thermostat T-75 Radio
1	Radio antenna
2	Outdoor sensor
3	Indoor sensor
4	Supply sensor
5	Return sensor
6	Circulation pump
7	Mixing valve actuator • Thermal, 24 V DC, 3 W, NC (see illustration above) • Motorized, 0–10 V DC, externally powered
8	H/C switchover relay box (only used in Heating/cooling switchover systems)
9	Diverting valve (only used in Heating/cooling switchover systems)
10	Pipes to heating source
11	Pipes to cooling source

3.1.2 Meltaway example

The figure below shows how the Climate Controller C-46 can be set up in a meltaway system. The figure also shows several system components that can be connected to the Climate Controller C-46.

NOTE!
Only Uponor sensors and should be used in combination with the Climate Controller C-46.



Item	Description
C-46	Climate Controller C-46
1	Simplified meltaway using timer and pushbutton (alternative solution)
2	Meltaway controller with snow-and-ice sensor (alternative solution)
3	Supply sensor
4	Return sensor
5	Circulation pump
6	Mixing valve actuator • Thermal (see illustration above) • Motorized, externally powered
7	Pipes to meltaway system
8	Pipes to heating source

3.2 Sensor handling

The Climate Controller C-46 can use sensors connected in different ways:

- Wired sensors directly connected to the Climate Controller C-46
- Radio thermostats linked through an antenna connected to the Climate Controller C-46
- Radio thermostats linked through an antenna connected to the Controller C-56 Radio, which in its turn is connected to the Climate Controller C-46 with a cable

3.2.1 Wired sensors

The following Uponor wired sensors can be connected to the Climate Controller C-46:

- Supply sensor
- Return sensor
- Indoor sensor
- Outdoor sensor

Each sensor type has a dedicated connector on the Climate Controller C-46, see section 5.4 Connecting the Climate Controller C-46, page 14.

3.2.2 Radio thermostats

If an antenna is connected to the Climate Controller C-46, the following thermostats and sensors can be used:

- Relative Humidity Sensor H-56
- Thermostat Public T-54 Radio
- Thermostat T-55 Radio
- Thermostat T-75 Radio
- Floor sensor connected to a Thermostat Public T-54 Radio
- Outdoor sensor connected to a Thermostat Public T-54 Radio
- Indoor sensor connected to a Thermostat Public T-54 Radio

3.2.3 Radio thermostats through Controller C-56 Radio

If the Controller C-56 Radio is connected to the Climate Controller C-46, then the following thermostats and sensors liked to Controller C-56 Radio can be used:

- Relative Humidity Sensor H-56
- Thermostat Public T-54 Radio
- Thermostat T-55 Radio
- Thermostat T-75 Radio
- Outdoor sensor connected to a Thermostat Public T-54 Radio
- Indoor sensor connected to a Thermostat Public T-54 Radio

Note: A floor sensor connected to a Thermostat T-54 Radio, which is linked to the Controller C-56 Radio, will not be visible on the system bus and cannot be used by the Climate Controller C-46.

3.2.4 Considerations in Heating and cooling mode

If the Climate Controller C-46 is working in Heating and cooling mode, the following conditions apply:

- **Wired sensors**

  Setpoints for heating and cooling are set separately in the Climate Controller C-46.

- **Radio thermostats**

  The setpoint in this case is adjusted in the thermostat.

  The heating setpoint is defined as the setpoint set in the thermostat.

  The cooling setpoint is defined as the heating setpoint plus 1.5 °C.

- Radio thermostats through Controller C-56 Radio

Setpoint adjustment and definitions are the same as for the case with radio thermostats connected to the Climate Controller C-46, see above.

3.2.5 Sensor priorities

When sensors and thermostats are connected to the Climate Controller C-46 in different ways, the following priorities apply:

1. Thermostats linked to the Climate Controller C-46 through an antenna have the first priority.
2. Sensors directly connected to the Climate Controller C-46 have the second priority.
3. Thermostats linked to the Controller C-56 Radio, connected to the Climate Controller C-46, have the third priority.

Example

A house is heated using a system set up in Heating – indoor controlled mode. In this case, a Thermostat T-75 Radio is linked to the Climate Controller C-46, using the antenna. As a backup, an indoor sensor is directly connected to the Climate Controller C-46.

Under normal conditions, the Climate Controller C-46 will use the readings from Thermostat T-75 Radio to monitor the indoor temperature.

However, if the batteries in the Thermostat T-75 Radio fail, it will not be able to send any temperature readings to the Climate Controller C-46. Then the Climate Controller C-46, will switch the monitoring to the inhouse sensor instead.

When the used batteries in the Thermostat T-75 Radio are replaced, the Thermostat T-75 Radio will go back to sending temperature readings again. Then the Climate Controller C-46 senses this and the monitoring of indoor temperature is switched back to the Thermostat T-75 Radio.

3.3 Operating modes

The following operating modes are available for the Climate Controller C-46:

- Heating
- Cooling
- Heating and cooling
- Meltaway

The following sections give a brief description of the different operating modes and list which sensors must be connected and which operating parameters must be set as a minimum.

3.3.1 Heating modes

Depending on the sensors used, the following heating modes are described in the sub-sections below:

- Heating – fixed supply
- Heating – outdoor controlled supply
- Heating – outdoor controlled supply with indoor compensation
- Heating – indoor controlled
- Heating – outdoor controlled average

See also an overview in section 3.3.4 Operating modes and sensor use, page 10.

Heating – fixed supply

In this operating mode, the Climate Controller C-46 maintains a constant supply temperature.

The user must adjust the **Heating supply setpoint** parameter to meet the heating need of the house.

The Climate Controller C-46 uses the following input:

- Readings from supply sensor
- Setting of **Heating supply setpoint** parameter, see section 7.3.3 Heating supply setpoint, page 20

Heating – outdoor controlled supply

In this operating mode, the Climate Controller C-46 adjusts the supply temperature depending on the outdoor temperature. That is to say, the supply temperature increases with falling outdoor temperature and the other way around.

When the parameters are correctly set, the indoor temperature is kept at a constant level. See also section 10.2 Adjusting the heat curve, page 46.

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from outdoor sensor
- Readings from floor sensor (optional)
- Setting of **T-slope** parameter, see section 7.3.5 T-slope, page 20
- Setting of **T-adjustment** parameter, see section 7.3.6 T-adjustment, page 20
- Setting of **Min./Max. supply** parameter, see section 6.2.4 Heating, page 16

Heating – outdoor controlled supply with indoor compensation

In this operating mode, the Climate Controller C-46 adjusts the supply temperature depending on both the outdoor and indoor temperatures. That is to say, the supply temperature increases with falling outdoor temperature and the other way around.

When the parameters are correctly set, the indoor temperature will be kept at a constant level. See also section 10.2 Adjusting the heat curve, page 46.

The supply temperature is adjusted as the Climate Controller C-46 compares the readings from the indoor sensor against the indoor setpoint temperature. A deviation of 1 °C in indoor temperature results in a 4 °C compensation of the supply temperature (default setting).

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from outdoor sensor
- Readings from indoor sensor
- Setting of **Indoor setpoint** parameter, see section 7.3.4 Indoor setpoint, page 20
- Setting of **T-slope** parameter, see section 7.3.5 T-slope, page 20
- Setting of **T-adjustment** parameter, see section 7.3.6 T-adjustment, page 20

- Setting of **Min./Max. supply** parameter, see section 6.2.4 Heating, page 16
- Setting of **Indoor sensor influence** parameter, see section 8.5.8 Indoor sensor influence, page 26

Heating – outdoor controlled average

In this operating mode, the Climate Controller C-46 adjusts the supply temperature depending on the average supply–return temperature.

When the parameters are set, the indoor temperature will be kept at a constant level. See also section 10.2 Adjusting the heat curve, page 46.

The supply temperature is adjusted as the Climate Controller C-46 compares the mean value of the readings from the return and supply sensors against the average setpoint temperature.

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from outdoor sensor
- Readings from return sensor
- Setting of **Average setpoint** parameter, see section 8.5.3 Average setpoint, page 25
- Setting of **T-slope** parameter, see section 7.3.5 T-slope, page 20
- Setting of **T-adjustment** parameter, see section 7.3.6 T-adjustment, page 20
- Setting of **Min./Max. supply** parameter, see section 8.5.4 Min./Max. supply, page 25

Heating – indoor controlled

In this operating mode, the Climate Controller C-46 adjusts the supply temperature to make the indoor temperature meet the indoor setpoint.

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from indoor sensor
- Setting of **Indoor setpoint** parameter, see section 7.3.4 Indoor setpoint, page 20
- Setting of **Min./Max. supply** parameters, see section 8.5.4 Min./Max. supply, page 25

3.3.2 Cooling modes

Depending on the sensors used, the following cooling modes are available:

- Cooling – fixed supply
- Cooling – indoor compensated supply with dew point control

See also an overview in section 3.3.4 Operating modes and sensor use, page 10.

Cooling – fixed supply

In this operating mode, the Climate Controller C-46 maintains a constant supply temperature.

The user must adjust the **Cooling supply setpoint** parameter to meet the cooling need of the house.

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from floor sensor (optional)
- Setting of **Indoor setpoint** parameter, see section 8.6.2 Indoor setpoint, page 27
- Setting of **Min./Max. supply** parameters, see section 8.6.3 Min./Max. supply, page 28

Cooling – indoor controlled

In this operating mode, the Climate Controller C-46 adjusts the supply temperature to make the indoor temperature meet the indoor setpoint.

The user must adjust the **Cooling supply setpoint** parameter to meet the cooling need of the house.

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from indoor sensor
- Readings from floor sensor (optional)
- Setting of **Cooling supply setpoint** parameter, see section 7.3.8 Cooling supply setpoint, page 20

Cooling – indoor compensated supply with dew point control

In this operating mode, the Climate Controller C-46 adjusts the supply temperature depending on the calculated dew point to prevent condensation.

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from indoor sensor
- Readings from Humidity sensor H-56
- Setting of **Cooling supply setpoint** parameter, see section 7.3.8 Cooling supply setpoint, page 20
- Setting of **Indoor setpoint** parameter, see section 8.5.2 Indoor setpoint, page 24
- Setting of **Indoor sensor influence** parameter, see section 8.5.8 Indoor sensor influence, page 26
- Setting of **Dew point margin** parameter, see section 8.6.7 Dehumidifier control, page 29
- Setting of **Dew point offset** parameter, see section 8.6.7 Dehumidifier control, page 29

3.3.3 Meltaway mode

In this operating mode, the Climate Controller C-46 maintains a constant supply temperature to either meet the **Idle setpoint** temperature or the **Melting supply setpoint** temperature.

A separate snow and ice meltaway product with a snow sensor can also be connected to the Climate Controller C-46.

The Climate Controller C-46 works with the following input:

- Readings from supply sensor
- Readings from return sensor
- Setting of **Idle setpoint** parameter, see section 7.3.13 Idle setpoint, page 21
- Setting of **Melting supply setpoint** parameter, see section 7.3.14 Melting supply setpoint, page 21

3.3.4 Operating modes and sensor use

The table below shows which sensors are used in which operating mode.

Operating mode	Supply sensor	Outdoor sensor	Indoor sensor	Return sensor	Relative humidity sensor	Floor sensor
Heating – fixed supply	X					
Heating – outdoor controlled supply	X	X				O
Heating – outdoor controlled supply with indoor compensation	X	X	X			
Heating – outdoor controlled average	X	X		X		
Heating – indoor controlled	X		X			
Cooling – fixed supply	X					O
Cooling – indoor controlled	X		X			O
Cooling – indoor compensated supply with dew point control	X		X		X	O
Meltaway	X			X		
X = the sensor must be used in this operating mode O = the sensor is optional						

3.3.5 Heating and cooling

H/C switchover – indoor-outdoor temperature controlled

In this switchover mode, the Climate Controller C-46 switches between heating and cooling mode depending on the temperature readings from the indoor and outdoor sensors. The Climate Controller C-46 can also control an external diverting valve through a relay contact.

This switchover mode requires that either the **Bus master** or **No bus** function is selected from the **H/C switchover** menu. See section 8.7 H/C switchover, page 30. The bus settings refer to the Uponor Control Systems internal bus.

Both an indoor sensor and an outdoor sensor must be connected to the Climate Controller C-46 for the switchover function. The same sensors are also used for the heating and cooling functions if required.

It is possible to select any of the available heating modes for the heating function and any of the available cooling functions for the cooling mode. See sections above.

The Climate Controller C-46 works with the following input for the H/C switchover function:

- Readings from indoor sensor
- Readings from outdoor sensor
- Setting of **Outdoor trigger temp.** parameter, see section 8.7.2 Outdoor-indoor/supply temp., page 30
- Setting of **Outdoor trigger delay** parameter, see section 8.7.2 Outdoor-indoor/supply temp., page 30
- Setting of **Indoor trigger temp.** parameter, see section 8.7.2 Outdoor-indoor/supply temp., page 30
- Setting of **Indoor trigger delay** parameter, see section 8.7.2 Outdoor-indoor/supply temp., page 30

H/C switchover – supply temperature controlled

In this switchover mode, the Climate Controller C-46 switches between heating and cooling mode depending on the primary supply water temperature.

If the water supplied is below a defined trigger value, the Climate Controller C-46 switches over to cooling mode. If the water supplied is above the same trigger value and a defined hysteresis value, the Climate Controller C-46 switches over to heating mode. A hysteresis parameter is defined to achieve correct switchover operations.

This switchover mode requires that either the **Bus master** or **No bus** function is selected from the **H/C switchover** menu. See section 8.7 H/C switchover, page 30. The bus settings refer to the Uponor Control Systems internal bus.

It is possible to select any of the available heating modes for the heating function and any of the available cooling modes for the cooling function. See sections above.

The Climate Controller C-46 works with the following input for the H/C switchover function:

- Readings from supply sensor
- Setting of **Supply temperature** parameter, see section 8.7.3 Supply water temp., page 31
- Setting of **Hysteresis** parameter, see section 8.7.3 Supply water temp., page 31

H/C switchover manual mode

In this switchover mode, the Climate Controller C-46 switches between heating and cooling when the user manually sets it to either mode.

The Climate Controller C-46 enters heating mode when the user selects **Heating** in the **H/C switchover** menu. See section 8.7 H/C switchover, page 30.

The Climate Controller C-46 enters cooling mode when the user selects **Cooling** in the **H/C switchover** menu. See section 8.7 H/C switchover, page 30.

It is possible to select any of the available heating modes for the heating function and any of the available cooling modes for the cooling function. See sections above.

H/C switchover in slave mode

In this switchover mode, the Climate Controller C-46 switches between heating and cooling mode controlled from an external source.

There are two ways to set the Climate Controller C-46 in slave mode:

- If the **Bus slave** function is selected from the **H/C switchover** menu, the switchover function will be controlled from a Controller C-56 Radio.
- If the **General purpose input** function is selected in either the **Bus master** menu or the **No bus** menu, the switchover function will be controlled from an external source. See section 8.7.1 Bus master and No bus modes, page 30.

  An external source can for example be a manual switch or a heat pump.

4 System integration of Climate Controller C-46 and Controller C-56 Radio

The Climate Controller C-46 can be integrated with the Controller C-56 Radio to enhance the capabilities of the climate system.

NOTE!
The Controller C-56 Radio must be equipped with software version 5.0.3 or later to work correctly in connection with Climate Controller C-46.

Controllers C-56 Radio with assembly date 4010 or later have the correct software version. Date format is WWYY. A sticker with the assembly date can be found on the high voltage compartment when the cover is removed.

Controllers C-56 Radio with an older assembly date can be upgraded by Uponor. Please contact Uponor for more information.

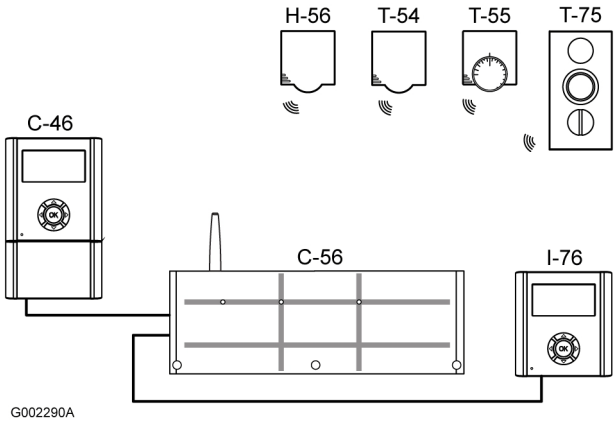
Some typical configurations with Climate Controller C-46 and Controller C-56 Radio interconnected are listed below:

- If a circulation pump is connected to the Climate Controller C-46, the pump management decisions can be made by Controller C-56 Radio. This means that the pump will be stopped when there is no heating or cooling demand.
- One or more Relative Humidity Sensors H-56 connected through Controller C-56 Radio. This configuration can use the average or maximum relative humidity in a zone.
- One or more extra indoor thermostats connected through Controller C-56 Radio. This configuration can be used to calculate the average temperature or the greatest deviation from the setpoint temperature in a zone.
- Outdoor temperature sensor connected through Controller C-56 Radio
- Economy and comfort modes controlled by the timer function in Interface I-76 through Controller C-56 Radio.

NOTE!
The Climate Controller C-46 will go to economy mode only if all zones controlled by Controller C-56 Radio are in economy mode.

- Holiday mode controlled by the timer function in Interface I-76 through Controller C-56 Radio
- Heating/cooling switch controlled from the menu in Interface I-76 through Controller C-56 Radio or from external Heating/cooling switch connected to the Controller C-56 Radio

The illustration below shows an example configuration.



For instructions how to connect the Controller C-56 Radio to Climate Controller C-46, see section 5.4 Connecting the Climate Controller C-46, page 14.

For instructions how to connect and link components to the Controller C-56 Radio, see Uponor Control System, Installation and Operation Manual.

5 Installing Climate Controller C-46

5.1 Preparing the installation

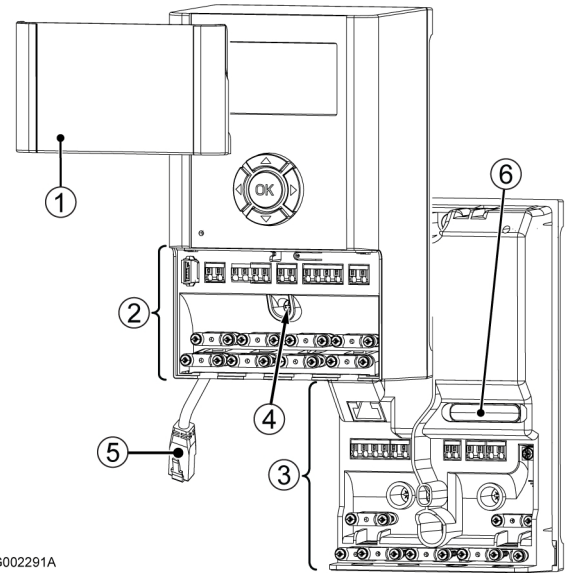
Follow the guidelines below to determine the best installation position:

1. Study the connection diagrams of the Climate Controller C-46, see section 5.4 Connecting the Climate Controller C-46, page 14.
2. Ensure that AC power is available for connection of the Climate Controller C-46.
3. Ensure that the installation position is free from running and dripping water.
4. Ensure that there is no risk for overheating of the Climate Controller C-46 due to high ambient temperature.
5. Select a mounting position on a vertical surface at a height that is convenient for operation of the Climate Controller C-46.

5.2 Opening the Climate Controller C-46

To open the Climate Controller C-46:

1. Carefully lift the cover, starting at the upper edge.
2. Loosen the captive screw which fixes the upper compartment to the lower.
3. Lift the upper compartment to reach the signal cable connected between the upper and lower compartments.
4. Disconnect the signal cable from the lower compartment.



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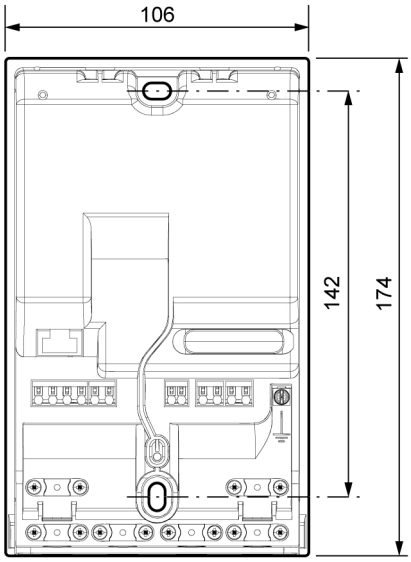
Pos.	Item
1	Cover
2	Upper compartment
3	Lower compartment
4	Fixing screw
5	Interconnection signal cable
6	Fuse T 5 A/250 V and spare fuse

5.3 Wall-mounting the Climate Controller C-46

The Climate Controller C-46 is delivered in a kit including screws and wall plugs. The figure below shows the Climate Controller C-46 dimensions and the mounting hole positions.



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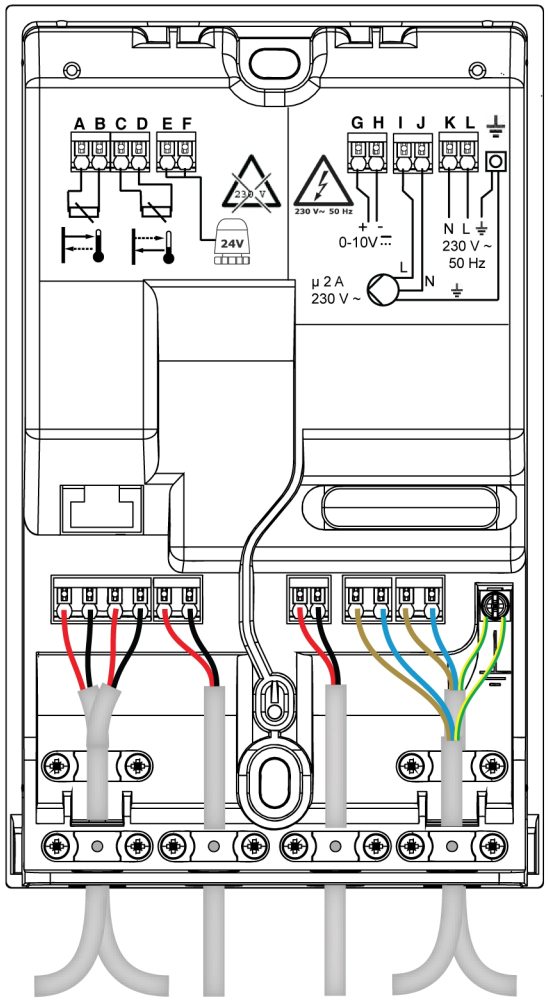
5.4 Connecting the Climate Controller C-46

Connections of sensors and other equipment is made in both the lower and upper compartments.

Lower compartment

The figure below shows an example of cable connection in the lower compartment.



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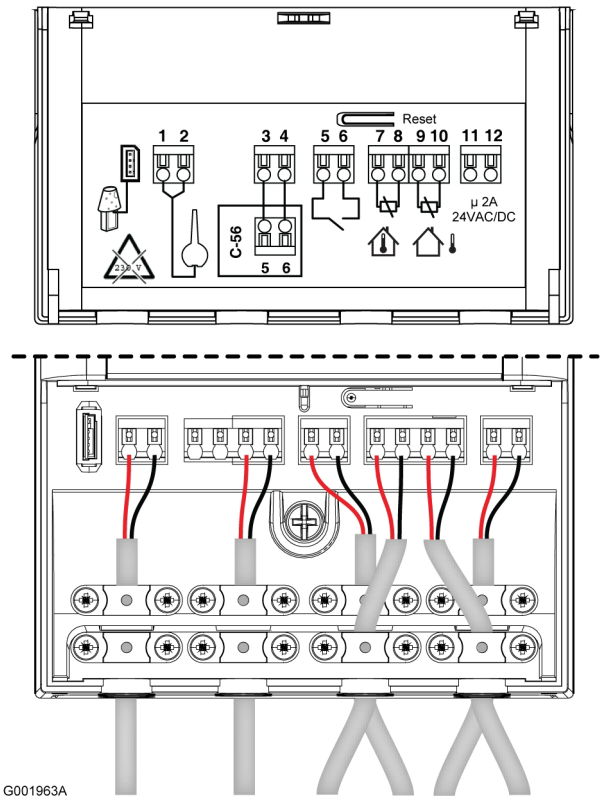
Connectors	Connections in lower compartment
A-B	Supply temperature sensor input
C-D	Return temperature sensor input
E-F *	+24 V DC output for thermal actuator
G-H *	0–10 V DC output for motorized valve
I-J	Pump output
K-L	230 V AC power supply
7	Earth ground

* Only one of these ports can be used in the same installation

1. Connect cables to be used as indicated in the figure and table above.
2. Loosen the cable clamp closest to each cable and route the cable through the clamp.
3. Tighten the cable clamp firmly and ensure that the cables are fixed.

Upper compartment

The figure below shows an example of cable connection in the upper compartment. On top of the illustration is the cover inside with label.



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Connectors	Connections in upper compartment
1-2	Active antenna connection
3-4	C-56 connection
5-6	General purpose input
7-8	Indoor temperature sensor input
9-10	Outdoor temperature sensor input
11-12	General purpose output relay

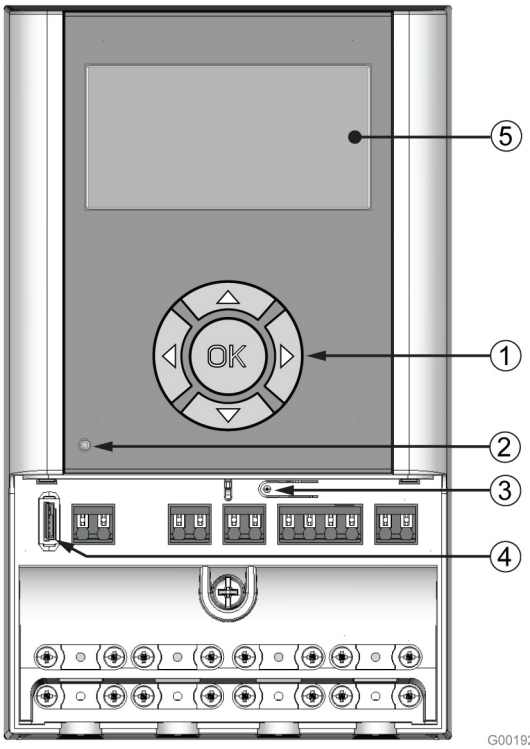
1. Connect cables to be used as indicated in the figure and table above.
2. Loosen the cable clamp closest to each cable and route the cable through the clamp.
3. Tighten the cable clamp firmly and ensure that the cables are fixed.
4. Reconnect the signal cable from the upper compartment to the lower.
5. Put back the upper compartment on top of the lower and tighten the fixing screw.
6. Put back the cover onto the upper compartment.

6 Setting Up the Climate Controller C-46

The Climate Controller C-46 features a four row display and a set of navigation keys for the operation.

6.1 Operation interface

The Climate Controller C-46 operating interface is shown in the figure below.



Pos.	Description
1	Navigation keys
2	Alarm indicator
3	Reset button
4	Data stick connector
5	Display

6.1.1 Navigation keys

Each of the five navigation keys on the front has dual functions as described in the table below.

Key		Functions		
	▶	Displays next menu	or	Moves to next field
	◀	Displays previous menu	or	Moves to previous field
	▲	Moves to line above	or	Increases value
	▼	Moves to line below	or	Decreases value
	**OK**	Displays next screen	or	Confirms selections; displays current menu

6.1.2 Alarm indicator

The alarm indicator flashes in case there is any alarm detected in the Climate Controller C-46. See section 8.11.1 All alarms, page 37.

6.1.3 Reset button

Pushing the reset button resets the settings made on **Language** and **Time and date** screens. See sections 6.2.1 Language, page 16 and 6.2.2 Set time and date, page 16.

6.1.4 Data stick connector

The data stick connector is for Uponor data stick use only.

6.1.5 Display

The display shows the basic system information in the default state. There are three different screen modes to display further information to the user:

- **Installation wizard**

  This screen mode is presented when the Climate Controller C-46 is powered up for the very first time at installation. This screen mode is also used after changing or resetting the operating mode. See section 6.2 Installation wizard, page 16 for more information.

- **Quick menu**

  This screen mode is used to display a number of screens displaying basic information for daily use. If the Climate Controller C-46 is set to Installer access level, it is also possible to set some basic parameters. See section 7 Quick menu, page 19 for more information.

- **Main menu**

  The main menu and all its sub-menus are used for displaying any accessible information, parameter settings, and selecting operating modes that are accessible in the system. See section 8 Operating the Climate Controller C-46, page 22 for more information.

The following screen is displayed as default in basic access level:

Pos.	Icon	Description
1		Basic access level
		Installer access level
2	**Supply** *or*	Measured **Supply** temperature in most **Heating** and all **Cooling** operating modes
	Indoor *or*	Measured **Indoor** temperature in **Heating – indoor controlled** mode
	Idle **Melting**	**Idle** or **Melting** in **Meltaway** operating mode
3		Power-on indicator • On = Climate Controller C-46 is powered on • Flashing = Climate Controller C-46 is in standby mode
4		Heating mode indicator
		Cooling mode indicator
5		Mixer valve
		Mixer valve is opening
		Mixer valve is closing
6		Supply circuit pump operating
		Supply circuit pump standby
		Supply circuit pump not managed

Pos.	Icon	Description
7	COMF	Comfort mode
	ECO	Economy mode

6.2 Installation wizard

When the Climate Controller C-46 is started the very first time, it will guide the operator to make the necessary primary settings of the system.

The installation wizard is also started after changing or resetting the operating mode.

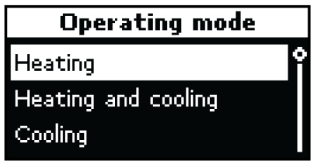
6.2.1 Language

1. Use the ▼ and ▲ keys to select the preferred language.
2. Press **OK** to display the next screen, see section 6.2.2 Set time and date.

6.2.2 Set time and date

1. Use the ▼ and ▲ keys to change the highlighted setting.
2. Use the ◄ and ► keys to move to the next field.
3. Press **OK** to display the next screen, see section 6.2.3 Operating mode

6.2.3 Operating mode



1. Use the ▼ and ▲ keys to select the **Operating Mode**.

   Depending on the configuration of the Climate Controller C-46, the following operating modes are available:
   - Heating
   - Heating + Cooling
   - Cooling
   - Meltaway
2. Press **OK** to display the next screen, see section 6.2.4 Heating, page 16, 6.2.5 Cooling, page 17, or 6.2.6 Meltaway, page 17.

6.2.4 Heating

The screen **Heating: Sensors Used** is displayed if either **Heating** or **Heating + Cooling** mode has been selected in the previous screen.

The **Supply** sensor is selected by default and cannot be unselected.

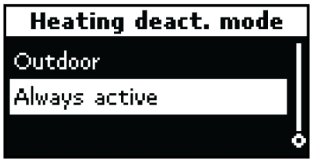
One to three sensors can be selected, including the default **Supply** sensor.

1. Use the navigation keys to highlight a sensor to be used.
2. Press **OK** to select the sensor.
3. Press **OK** again to clear a selection if necessary.

4. Navigate to the **OK** field and press **OK** to display the next screen.
5. In the screen **Min./max. supply**, set the required minimum and maximum temperatures in the supply circuit.

   Minimum supply temperature:
   - Default setting: 5 °C
   - Setting range: 5–35 °C
   - Setting accuracy: 1 °C

   Maximum supply temperature:
   - Default setting: 40 °C
   - Setting range: 5–70 °C
   - Setting accuracy: 1 °C
6. Press **OK** to confirm the settings.
7. In the screen **Heating Deact. Mode,** use the navigation keys to highlight the heating deactivation mode to be used.



   The following modes are available:
   - Outdoor
   - Always active
8. Press **OK** to confirm the selection.

   The next screen is displayed, see section 6.2.5 Cooling, page 17, or 6.2.9 Mixing valve mode, page 18.

6.2.5 Cooling

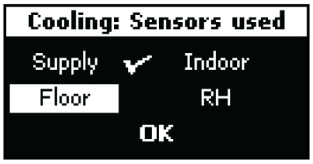
The screen **Cooling: Sensors Used** is displayed if either **Cooling** or **Heating + Cooling** mode has been selected in the previous screen.

The **Supply** sensor is selected by default and cannot be cleared.

One to four sensors can be selected, including the default **Supply** sensor.

1. Use the navigation keys to highlight a sensor to be used.

   RH = relative humidity sensor.
2. Press **OK** to select a sensor.
3. Press **OK** again to clear a selection if necessary.
4. Navigate to the **OK** field and press **OK** to display the next screen.



5. In the screen **Min./max. supply**, set the required minimum and maximum temperatures in the supply circuit.

   Minimum supply temperature:
   - Default setting: 8 °C
   - Setting range: 5–40 °C
   - Setting accuracy: 1 °C

   Maximum supply temperature:
   - Default setting: 25 °C
   - Setting range: 5–40 °C
   - Setting accuracy: 1 °C
6. Press **OK** to confirm the settings.
7. In the screen **Cooling Deact. Mode**, use the navigation keys to highlight the cooling deactivation mode to be used.

   The following modes are available:
   - Outdoor
   - Always active
8. Press **OK** to confirm the selection.

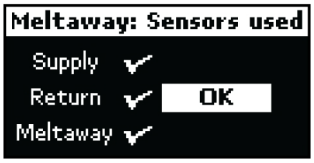
   The next screen is displayed, see section 6.2.7 H/C switchover, page 18, or 6.2.9 Mixing valve mode, page 18.

6.2.6 Meltaway

The screen **Meltaway: Sensors Used** is displayed if **Meltaway** mode has been selected in the previous screen.

All three sensors, **Supply**, **Return**, and **Meltaway** are selected by default and cannot be cleared.

1. Press **OK** to confirm the default selection of all three sensors.



2. In the screen **Min./max. supply**, set the required minimum and maximum temperatures in the supply circuit.

   Minimum supply temperature:
   - Default setting: 5 °C
   - Setting range: 5–35 °C
   - Setting accuracy: 1 °C

   Maximum supply temperature:
   - Default setting: 40 °C
   - Setting range: 5–70 °C
   - Setting accuracy: 1 °C
3. Press **OK** to confirm the settings.

The next screen is displayed, see section 6.2.9 Mixing valve mode, page 18.

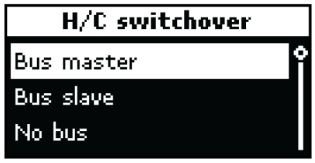
6.2.7 H/C switchover

The internal system bus is used to control the heating/cooling swithover function when a Controller C-56 Radio is connected to the Climate Controller C-46.

The following bus modes are selectable:

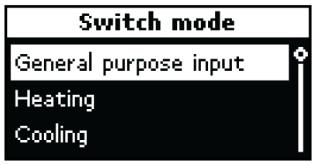
- Bus master = the Climate Controller C-46 controls the communication on the system bus
- Bus slave = the Climate Controller C-46 works as a slave on the bus, which is controlled by the Controller C-56 Radio
- No bus = the internal system bus is not used

1. Use the navigation keys to highlight the system bus to be used.
2. Press **OK** to display the next screen, see section 6.2.8 Switch mode.



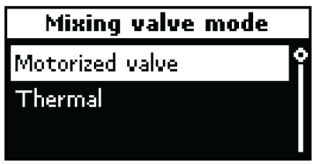
6.2.8 Switch mode

1. Use the navigation keys to highlight the switched mode to be used.
2. Press **OK** to display the next screen, see section 6.2.9 Mixing valve mode.



6.2.9 Mixing valve mode

1. Use the navigation keys to highlight the mixing valve mode to be used.



2. Press **OK** to display the next screen.

   The installation wizard is complete and the Uponor screen is displayed.

6.3 Restarting the installation wizard

If there is any kind of mistake made when using the installation wizard, then do this to restart it:

1. *Preferred method:*

   1.1. Press the the two keys ◀ and ▶ simultaneously until the screen **Access level** is displayed:

   1.2. Confirm the selection by pressing **OK**.

   Continue with step 2. below.

   Alternative method:

   1.1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Access level

   Example screen:

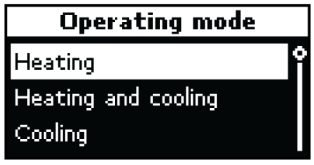
   1.2. Select the **Installer** access level and press **OK**.

   Continue with step 2. below.

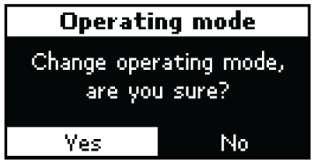
2. Navigate through the screens using the navigation keys

   Uponor > Main menu > Control settings > Advanced > Operating mode

   Example screen:



3. Select the preferred operating mode using the ▼ and ▲ keys.
4. Confirm the selection by pressing **OK**.
5. To answer the question **Change Operating mode, are you sure?**, select **Yes** and press **OK**.



The installation wizard is now restarted and the next screen displays sensors to be selected. See section section 6.2.4 Heating, page 16, 6.2.5 Cooling, page 17, or 6.2.6 Meltaway, page 17.

6.4 Operation

Starting operation

1. Press the OK button to display the Main menu screen.

The operation of the Climate Controller C-46 is described in the Operation Manual, that is found on the CD supplied with the equipment.

7 Quick menu

The Quick menu consists of a series of screens easily accessible from the Uponor screen. These screens displays readings for daily use. If the Climate Controller C-46 is set to Installer access level, it is also possible to modify some parameters.

For a full access to all screens in the Climate Controller C-46, see section 8 Operating the Climate Controller C-46, page 22.

NOTE!
Depending on both the operating mode of Climate Controller C-46 and its access level, only a selection of the screens described below will be accessible. See description for each screen.

7.1 Uponor

The Uponor screen is the start screen. It is the default screen shown when the Climate Controller C-46 is not accessed by the user.

For a complete description of the information displayed on the Uponor screen, see section 6.1.5 Display, page 15.

1. Press the ◀ key to display the **Date and time** screen.
2. Press the ▶ key to display the first temperature information screen.

7.2 Information screens

The information screens can be accessed when the Climate Controller C-46 is set up in **Basic** access level as well as **Installer** access level.

7.2.1 Navigating information screens

To navigate through the information screens:

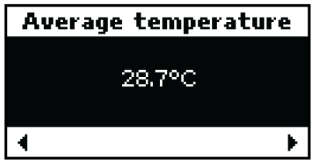
1. Press the ▶ key to display the next information screen.
   Press the ◀ key to display the previous information screen.
   Example screen:

7.2.2 Date and time

The **Date and time** screen can be displayed in any Climate Controller C-46 mode.

7.2.3 Average temperature

The average temperature is the mean value of the supply and return temperatures. This screen is displayed if the Climate Controller C-46 is set up in **Heating – outdoor controlled average** mode.

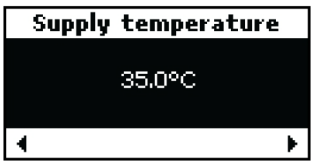


7.2.4 Return temperature

The return temperature is displayed if the Climate Controller C-46 is set up in **Heating – outdoor controlled average** mode or **Meltaway** mode.

7.2.5 Supply temperature

The supply temperature is displayed if the Climate Controller C-46 is set up in **Heating – indoor controlled** mode or **Meltaway** mode.



7.2.6 Outdoor temperature

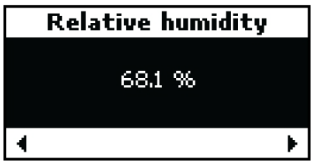
The outdoor temperature is displayed if the Climate Controller C-46 is set up in any **Heating – outdoor controlled** mode.

7.2.7 Indoor temperature

The indoor temperature is displayed if the Climate Controller C-46 is set up in **Heating – outdoor controlled supply with indoor compensation** mode or **Cooling – fixed supply with dew point control** mode.

7.2.8 Relative humidity

The relative humidity is displayed if the Climate Controller C-46 is set up in **Cooling – fixed supply with dew point control** mode.



7.3 Parameter screens

The parameter setting screens can only be accessed when the Climate Controller C-46 is set up in **Installer** access level.

7.3.1 Navigating parameter screens

To navigate through the parameter setting screens:

1. Press **OK** for two seconds to highlight the parameter.
2. Press the ▼ and ▲ keys to change the parameter value.
3. Press **OK** to confirm the setting.
4. Press the ▶ key to display the next screen.
   Press the ◀ key to display the previous information screen.

Example screens:

7.3.2 System standby mode

The **System standby mode** can be set in any Climate Controller C-46 operating mode.

Standby modes:

- Normal operation (default)
- System standby

7.3.3 Heating supply setpoint

The **Heating supply setpoint** can be set if the Climate Controller C-46 is set up in **Heating – fixed supply** mode.

Setpoint values:

- Default setting: 35 °C
- Setpoint range: 5–40 °C

7.3.4 Indoor setpoint

The **Indoor setpoint** can be set if a wired indoor sensor is used and the Climate Controller C-46 is set up in **Heating – indoor controlled** mode or **Heating – outdoor controlled supply with indoor compensation** mode.

Setpoint values:

- Default setting: 22 °C
- Setpoint range: 5–35 °C

7.3.5 T-slope

The **T-slope** parameter can be set if the Climate Controller C-46 is set up in any **Heating – outdoor controlled** mode.

The T-slope parameter defines the gradient of the temperature graph. For more information, see section 10.2 Adjusting the heat curve, page 46.

Parameter values:

- Default setting: 0.2
- Parameter range: 0.1–1.6

7.3.6 T-adjustment

The **T-adjustment** parameter can be set if the Climate Controller C-46 is set up in any **Heating – outdoor controlled** mode.

The T-adjustment parameter defines the offset used for the temperature graph. For more information, see section 10.2 Adjusting the heat curve, page 46.

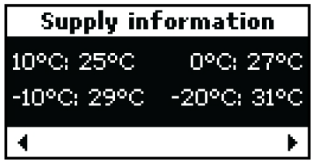
Parameter values:

- Default setting: 3
- Parameter range: -8 to +8

7.3.7 Supply information

The **Supply information** can be displayed if the Climate Controller C-46 is set up in any **Heating – outdoor controlled** mode.

The supply information is used as a tool when tuning the temperature graph with the T-slope and T-adjustment parameters. The screen displays the supply temperature for four different outdoor temperatures. For more information, see section 10.2 Adjusting the heat curve, page 46.



7.3.8 Cooling supply setpoint

The **Cooling supply setpoint** can be set if the Climate Controller C-46 is set up in any **Cooling** mode.

Setpoint values:

- Default setting: 18 °C
- Setpoint range: 5–25 °C

7.3.9 Cooling indoor setpoint

The **Cooling indoor setpoint** can be set if a wired indoor sensor is used and the Climate Controller C-46 is set up in **Cooling – indoor compensated supply with dew point control** mode.

Setpoint values:

- Default setting: 20 °C
- Setpoint range: 5–35 °C

7.3.10 Dew point margin

The **Dew point margin** can be set if the Climate Controller C-46 is set up in any **Cooling** mode.

Parameter values:

- Default setting: 4
- Parameter range: 1–10

7.3.11 Dew point offset

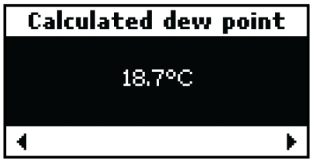
The **Dew point offset** can be set if the Climate Controller C-46 is set up in any **Cooling** mode.

Parameter values:

- Default setting: 0
- Parameter range: -5 to +5

7.3.12 Calculated dew point

The dew point is the temperature when water vapour in the air condenses into water. The dew point is calculated by the Climate Controller C-46.



This screen is displayed if the Climate Controller C-46 is set up in **Cooling – fixed supply with dew point control** mode.

7.3.13 Idle setpoint

The **Idle setpoint** can be set if the Climate Controller C-46 is set up in **Meltaway** mode.

Setpoint values:

- Default setting: 8 °C
- Setpoint range: 3–30 °C

7.3.14 Melting supply setpoint

The **Melting supply setpoint** can be set if the Climate Controller C-46 is set up in **Meltaway** mode.

Setpoint values:

- Default setting: 30 °C
- Setpoint range: 3–45 °C

8 Operating the Climate Controller C-46

This section describes the screens that are used for

- setting parameters to operate the system
- selecting operating modes and sub-modes
- displaying parameter settings
- displaying selected operating modes
- displaying sensor readings

NOTE!
All sequences described below start from the **Uponor** screen.

A description of how to navigate through the various screens using the navigating buttons is given in section 6.1 Operation interface, page 15.

The sections below are presented in the same order as in section 9 Menu structure, page 42.

8.1 Main menu

To display the **Main menu**:

1. When the **Uponor** screen is displayed, press the **OK** key to display the **Main menu**.

   The **Main menu** contains the following items:
   - Climate controller, section 8.2, page 22
   - Zones, section 8.3, page 23
   - Control settings, section 8.4, page 23
   - ECO mode, section 8.10, page 34
   - Alarms, section 8.11, page 37
   - General settings, settings 8.12, page 37
2. Select the required sub-menu and press **OK**.

8.2 Climate controller (menu)

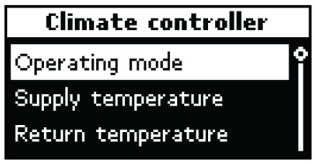
This section describes screens that are accessible from the **Climate controller** menu. Which of the screens that are accessible is dependent of the operating mode selected for the Climate Controller C-46. See section 3.3 Operating modes, page 8.

To display the **Climate controller** menu:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller

   Example screen:

The **Climate controller** menu contains the following items:

- Operating mode, section 8.2.1, page 22
- Supply temperature, section 8.2.2, page 22
- Return temperature, section 8.2.3, page 22
- Average temperature, section 8.2.4, page 23
- Outdoor temperature, section 8.2.5, page 23
- Indoor temperature, settings 8.2.6, page 23
- Relative humidity, settings 8.2.7, page 23

8.2.1 Operating mode

To display the status of the selected operating mode:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller > Operating mode

   Example screen when Heating mode is selected:

8.2.2 Supply temperature

To display the supply temperature:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller > Supply temperature

   Example screen:

8.2.3 Return temperature

The return temperature can be displayed if a return sensor is used.

To display the return temperature:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller > Return temperature

   Example screen:

8.2.4 Average temperature

The average temperature is the mean value of supply temperature and return temperature. It can be displayed if both a supply sensor and a return sensor are used.

To display the average temperature:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller > Average temperature

   Example screen.

8.2.5 Outdoor temperature

The outdoor temperature can be displayed if an outdoor sensor is used.

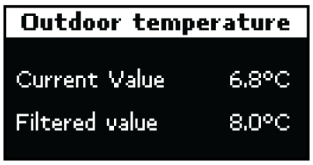
To display the outdoor temperature:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller > Outdoor temperature

   Example screen:

   The screen displays both the outdoor temperature current value and its filtered value.



8.2.6 Indoor temperature

The indoor temperature can be displayed if an indoor sensor is used.

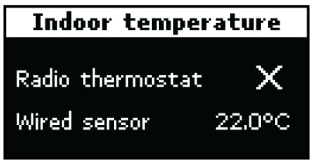
To display the indoor temperature:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller > Indoor temperature

   Example screen:

   The screen displays temperature readings from both a radio thermostat and a wired sensor. When only one of the devices is connected, the other device is marked with a cross, **X**. In this example no radio thermostat is connected.



8.2.7 Relative humidity

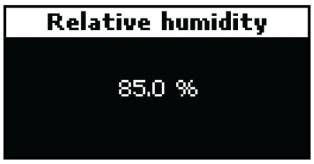
The relative humidity can be displayed if a humidity sensor is used.

To display the relative humidity:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Climate controller > Relative humidity

   Example screen:



8.3 Zones

If a Controller C-56 Radio system is connected to the Climate Controller C-46, it is possible to display the readings from sensors connected to the Controllers C-56 Radio.

To display the **Zones** menu:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Zones

   Example screen:

   In the Room list, the sensors are designated as X.YY with the following explanation:

   - X = controller number
   - YY = sensor number

2. Select the desired room and press **OK**.

3. Select sensor type, **Indoor temperature** or **Relative humidity** and press **OK**.

   The next screen displays the readings from the selected sensor.

8.4 Control settings

The following screens are accessible from the **Control settings** menu. Which of the screens that are accessible is dependent of the selected operating mode. See section 3.3 Operating modes, page 8.

1. In the **Control settings** menu, select the required item and press **OK**.
   - Standby mode, section 8.4.1, page 24
   - Heating, section 8.5, page 24
   - Cooling, section 8.6, page 27
   - H/C switchover, section 8.7, page 30
   - Meltaway, section 8.8, page 31
   - Advanced control, section 8.9, page 31

8.4.1 Standby mode

The Climate Controller C-46 can be set in standby mode to temporarily disable all controlling functions. However, it will still be possible to read measurements from the connected thermostats and sensors.

In standby mode it is possible to manually exercise the mixing valve mixing valve and pump, see section 8.9.8 Valve and pump exercise, page 33.

To set the Climate Controller C-46 in standby mode:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Standby mode

   Example screen:

2. Select **Enable** and confirm the selection by pressing the **OK** button.

When Standby mode is enabled, it is indicated on the Uponor screen by:

- The power indicator is flashing slowly
- The circuit pump is indicated with an empty circle

To set the Climate Controller C-46 in operating mode:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Standby mode

2. Select **Disable** and confirm the selection by pressing the **OK** button.

8.5 Heating

This section describes how to set parameters when the Climate Controller C-46 is working in **Heating** or **Heating and cooling** mode.

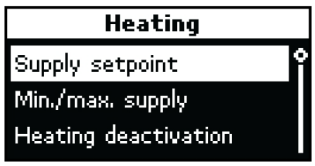
To bring up the Heating menu, do this:

1. Navigate through the screens using the navigation keys

   Uponor > Main menu > Control settings > Heating

   Example screen:

   Note that the items on the Heating menu are dependent on the selected operating mode.



2. Select the required sub-menu.

   The following list gives all possible sub-menus that can be accessed from the Heating menu.

   - Supply setpoint, section 8.5.1, page 24
   - Indoor setpoint, section 8.5.2, page 24
   - Average setpoint, section 8.5.3, page 25
   - Min./max. supply, section 8.5.4, page 25
   - T-slope, section 8.5.5, page 25
   - T-adjustment, section 8.5.6, page 25
   - Supply information, section 8.5.7, page 26
   - Indoor sensor influence, section 8.5.8, page 26.
   - Indoor sensor mode, section 8.5.9, page 26
   - Heating activation, section , section 8.5.10, page 26
   - Summer shut-off, section , page 26

3. Press **OK** to confirm the selection.
4. Continue the procedure as described in the referenced section given in the list in step 2. above.

8.5.1 Supply setpoint

The Supply setpoint is the temperature of the supply circuit that the system regulates to reach.

To set the supply setpoint:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Supply setpoint

   Example screen:

2. Select the desired set-point.
   - Default setting: 35 °C
   - Setting range: 5–70 °C
   - Setting accuracy: 0.5 °C
3. Confirm the setting by pressing **OK**.

8.5.2 Indoor setpoint

The indoor setpoint is the indoor temperature that the system regulates to reach. This screen is applicable if a wired indoor sensor is used.

To set the indoor setpoint:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Indoor setpoint

   Example screen:

2. Select the desired set-point.
   - Default setting: 20 °C
   - Setting range: 5–35 °C
   - Setting accuracy: 0.5 °C
3. Confirm the setting by pressing **OK**.

8.5.3 Average setpoint

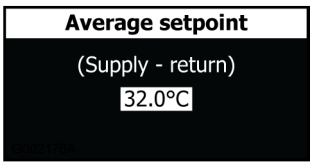
The average setpoint is the mean value of supply and return temperatures that the system regulates to reach.

To set the average setpoint:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Average setpoint

   Example screen:



2. Select the desired set-point.
   - Default setting: 25 °C
   - Setting range: 5–60 °C
   - Setting accuracy: 0.5 °C
3. Confirm the setting by pressing **OK**.

8.5.4 Min./Max. supply

The parameters **Min./Max. supply** are used for setting the minimum and maximum temperatures in the supply circuit.

To set the minimum and maximum supply temperatures:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Min./max. supply

   Example screen:

2. Select the required minimum and maximum temperatures.

   Minimum supply temperature:
   - Default setting: 5 °C
   - Setting range: 5–35 °C
   - Setting accuracy: 1 °C

   Maximum supply temperature:
   - Default setting: 40 °C
   - Setting range: 5–70 °C
   - Setting accuracy: 1 °C
3. Confirm the setting by pressing **OK**.

8.5.5 T-slope

A correctly adjusted heat curve will control the supply temperature influenced by outdoor temperature to reach the desired indoor temperature.

The heat curve is adjusted with the two parameters **T-slope** and **T-adjustment**.

T-slope controls how much the supply temperature is increased with falling outdoor temperature. **T-adjustment** is the supply temperature offset. **T-slope** can be set to acquire a smooth change of the temperature when heating a room.

For more information, see section 10.2 Adjusting the heat curve, page 46.

To set the **T-slope** parameter:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > T-slope

   Example screen:

2. Select the desired setting.
   - Default setting: 0.2
   - Setting range: 0.1–1.6
   - Setting accuracy: 0.1
3. Press **OK** to confirm the setting.

8.5.6 T-adjustment

A correctly adjusted heat curve will control the supply temperature influenced by outdoor temperature to reach the desired indoor temperature.

The heat curve is adjusted with the two parameters **T-slope** and **T-adjustment**.

T-slope controls how much the supply temperature is increased with falling outdoor temperature. **T-adjustment** is the supply temperature offset. **T-slope** can be set to acquire a smooth change of the temperature when heating a room.

For more information, see section 10.2 Adjusting the heat curve, page 46.

To set the T-adjustment parameter:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > T-slope

   Example screen:

2. Select the desired setting.
   - Default setting: 3
   - Setting range: -8 to +8
   - Setting accuracy: 1
3. Press **OK** to confirm the setting.

8.5.7 Supply information

The **Supply information** can be displayed if the Climate Controller C-46 is set up in any **Heating – outdoor controlled** mode.

The supply information is used as a tool when adjusting the heat curve with the T-slope and T-adjustment parameters. The screen displays the supply temperature for four different outdoor temperatures.

For more information, see section 10.2 Adjusting the heat curve, page 46.

To display the **Supply information** screen:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Supply information

   Example screen:

8.5.8 Indoor sensor influence

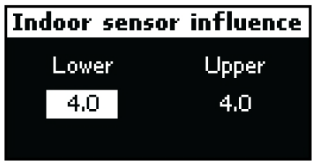
The indoor influence is a supply temperature adjustment that is depending on the difference of the indoor temperature and the indoor setpoint. This means that the supply will be increased if the indoor temperature is to low and it will be decreased if the indoor temperature is to high. The size of the adjustment is given by the **Indoor sensor influence** parameter.

To set the **Indoor sensor influence** parameter:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Indoor sensor influence

   Example screen:



2. Select the desired settings.

   Lower value:

   - Default setting: 4
   - Setting range: 0–8
   - Setting accuracy: .11

   Upper value:

   - Default setting: 4
   - Setting range: 0–8
   - Setting accuracy: 0.1

3. Press **OK** to confirm the setting.

8.5.9 Indoor sensor mode

The screen **Indoor sensor mode** is available when one or more indoor sensors are connected to the system through the Controller C-56 Radio.

To set the indoor sensor mode parameters:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Indoor sensor mode

   Example screen:

2. Select **Zone**.
3. Select **Mode** and press **OK**.
   - Default mode: Average
   - Mode selections: Average, Maximum

8.5.10 Heating activation

When the Climate Controller C-46 is working in **Heating** or **Heating and cooling** mode it is possible to set the Climate Controller C-46 to be either Always active or to utilize a Summer shut-off mode.

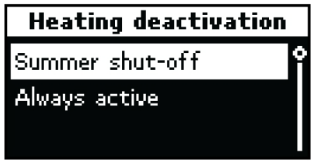
To set the heating activation mode:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Heating activation

   Example screen:

2. Select the desired mode.



3. Press **OK** to confirm the selection.
   - If the mode **Always active** is selected, then the Climate Controller C-46 returns to the **Heating** menu.
   - If the mode **Summer shut-off** is selected, then the menu **Summer shut-off** is displayed. See section below.

Summer shut-off

The summer shut-off function is used to save energy during the period of the year when heating is not necessary. This will save energy as the circulation pump will not be running.

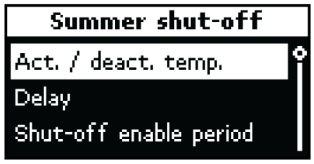
Some use cases are given in section 10.3 Heating summer shut-off and cooling winter shut-off, page 47.

To set the parameters needed for summer shut-off, do this:

1. Navigate through the screens:

   Uponor > Main menu > Control settings > Heating > Heating activation > Summer shut-off

   Example screen:



2. Select **Act./deact. temp.**
3. Set the parameter to the required value and press **OK**.

4. Select **Delay**.
5. Set the parameter to the required value and press **OK**.

6. Select **Shut-off enable period**.
7. Set the parameter to the required value and press **OK**.

Note: Setting the start and end dates to be the same means that the shut-off function is disabled.

- Default dates: **Start** = 01 Aug, **End** = 01 Aug
- Date ranges: **Start** = any date, **End** = any date

8.6 Cooling

This section describes how to set parameters when the Climate Controller C-46 is working in **Cooling** or **Heating and cooling** mode.

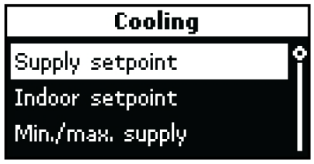
To bring up the **Cooling** menu:

1. Navigate through the screens using the navigation keys

   Uponor > Main menu > Control settings > Cooling

   Example screen:

   Note that the items on the **Cooling** menu are dependent on the selected operating mode.



2. The following list gives all possible sub-menus that can be accessed from the **Cooling** menu. In several cases the parameter setting is the same as when using the Quick menu but with a slightly different layout.
   - Supply setpoint, section 8.6.1, page 27
   - Indoor setpoint, section 8.6.2, page 27
   - Min./max. supply, section 8.6.3, page 28
   - Indoor sensor influence, section 8.6.4, page 28
   - Dew point, section 8.6.5, page 28
   - Cooling activation, section 8.6.6, page 29
   - Dehumidifier control, section 8.6.7, page 29
3. Press **OK** to confirm the selection.
4. Continue the procedure as described in the referenced section given in the list in step 2. above.

8.6.1 Supply setpoint

The supply setpoint is the temperature of the supply circuit that the system regulates to reach.

To set the supply setpoint:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Cooling > Supply setpoint

   Example screen:

2. Select the desired set-point.
   - Default setting: 18 °C
   - Setting range: 5–40 °C
   - Setting accuracy: 0.5 °C
3. Confirm the setting by pressing **OK**.

8.6.2 Indoor setpoint

The indoor setpoint is the indoor temperature that the system regulates to reach. This screen is applicable if a wired indoor sensor is used.

To set the indoor setpoint:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Indoor setpoint

   Example screen:

2. Select the desired set-point.
   - Default setting: 20 °C
   - Setting range: 5–35 °C
   - Setting accuracy: 0.5 °C
3. Confirm the setting by pressing **OK**.

8.6.3 Min./Max. supply

The parameters **Min./Max. supply** are used for setting the minimum and maximum temperatures in the supply circuit.

To set the minimum and maximum supply temperatures:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Cooling > Min./max. supply

   Example screen:

2. Select the required minimum and maximum temperatures.

   Minimum supply temperature:

   - Default setting: 5 °C
   - Setting range: 5–40 °C
   - Setting accuracy: 1 °C

   Maximum supply temperature:

   - Default setting: 25 °C
   - Setting range: 5–40 °C
   - Setting accuracy: 1 °C

3. Confirm the setting by pressing **OK**.

8.6.4 Indoor sensor influence

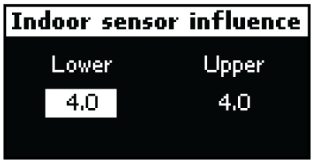
The indoor influence is a supply temperature adjustment that is depending on the difference of the indoor temperature and the indoor setpoint. This means that the supply will be increased if the indoor temperature is to low and it will be decreased if the indoor temperature is to high. The size of the adjustment is given by the **Indoor sensor influence** parameter.

To set the **Indoor sensor influence** parameter:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Heating > Indoor sensor influence

   Example screen:



2. Select the desired settings.

   Lower value:

   - Default setting: 4
   - Setting range: 0–8
   - Setting accuracy: 0.1

   Upper value:

   - Default setting: 4
   - Setting range: 0–8
   - Setting accuracy: 0.1

3. Press **OK** to confirm the setting.

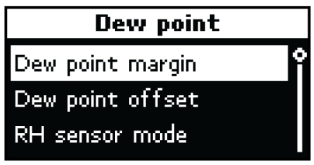
8.6.5 Dew point

To set the dew point parameters:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Cooling > Dew point

   Example screen:



2. Select **Dew point margin**

3. Set the parameter to the required value and press **OK**.

   - Default setting: 4
   - Setting range: 0–8
   - Setting accuracy: 1

4. Select **Dew point offset**

5. Set the parameter to the required value and press **OK**.

   - Default setting: 1
   - Setting range: -5 to +5
   - Setting accuracy: 1

6. Select **Calculated dew point**. The screen displays the dew point calculated by the Climate Controller C-46.

7. Select **Sensor mode**. This selection is used when one or more Relative Humidity Sensors H-56 is connected to the system through the Controller C-56 Radio.

   To set the indoor sensor mode parameters:

   7.1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Cooling > Sensor mode

   Example screen:

   7.2. Select **Zone**.

   7.3. Select **Mode** and press **OK**.

   Default mode: Average

   Mode selections: Average, Maximum

8.6.6 Cooling activation

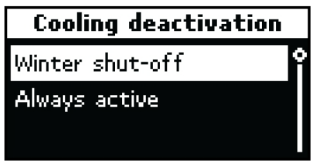
When the Climate Controller C-46 is working in **Cooling** or **Heating and cooling** mode it is possible to set the Climate Controller C-46 to be either always active or to utilize a winter shut-off mode.

To set the cooling activation mode:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Cooling > Cooling activation

2. Select **Winter shut-off** or **Always active** and press **OK** to confirm the selection.



   - If the mode **Winter shut-off** is selected, then the menu **Winter shut-off** is displayed. See section below.
   - If the mode **Always active** is selected, then the screen returns to the **Cooling** menu.

Winter shut-off

The winter shut-off function is used to save energy during the period of the year when cooling is not necessary. This will save energy as the circulation pump will not be running.

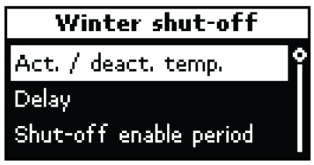
Some use cases are given in section 10.3 Heating summer shut-off and cooling winter shut-off, page 47.

To set the winter shut-off parameters:

1. Navigate through the screens:

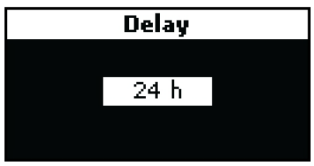
   Uponor > Main menu > Control settings > Cooling > Cooling activation > Winter shut-off

   Example screen:

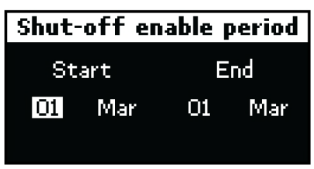


2. Select **Act./deact. temp.**
3. Set the parameter to the required value and press **OK**.

4. Select **Delay**.
5. Set the parameter to the required value and press **OK**.



6. Select **Shut-off enable period**.
7. Set the Start and End parameter to the required values and press **OK**.



   Note: Setting the start and end dates to be the same means that the shut-off function is disabled.

   - Default dates: **Start** = 01 Mar, **End** = 01 Mar
   - Date ranges: **Start** = any date, **End** = any date

8.6.7 Dehumidifier control

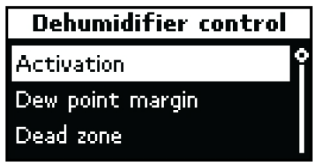
When the Climate Controller C-46 is working in **Cooling** or **Heating and cooling** mode, the dehumidifier control can be used to avoid high humidity and condensation.

To set the dehumidifier parameters:

1. Navigate through the screens:

   Uponor > Main menu > Control settings > Cooling > Dehumidifier control

   Example screen:



2. Select **Activation**
3. Select **Enable** or **Disable** as required and press **OK**.

4. Select **Dew point margin**
5. Set the parameter to the required value and press **OK**.

   - Default value: 4°C
   - Parameter range: -1°C to +10°C

6. Select **Dead zone**.
7. Set the parameter to the required value and press **OK**.

   - Default value: 2°C
   - Parameter range: 1 – 5°C

8. Select **Min. run time**.
9. Set the parameter to the required value and press **OK**.

   - Default value: 30 min
   - Parameter range: 5 – 60 min

8.7 H/C switchover

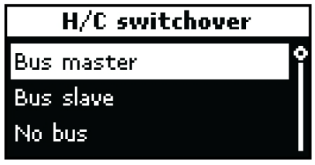
The **H/C switchover** menu is accessible when the Climate Controller C-46 is set to **Heating + cooling** operating mode.

To set the H/C switchover parameters, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > H/C switchover

   Example screen:



2. Select one of the following alternatives and press **OK**:

   - **Bus master**

     This bus mode is intended for configurations where a Controller C-56 Radio is connected to the Climate Controller C-46 and the Climate Controller C-46 is used to control the heating/cooling switch.

     If this bus mode is selected, then proceed with section 8.7.1 Bus master and No bus modes.

   - **Bus slave**

     This bus mode is intended for configurations where a Controller C-56 Radio is connected to the Climate Controller C-46 and the Controller C-56 Radio is used to control the heating/cooling switch.

     If this bus mode is selected, then this procedure is finished.

   - **No bus**

     This bus mode is intended for configurations where a Controller C-56 Radio is connected to the Climate Controller C-46 but the bus is not used for heating and cooling commands.

     This bus mode is also used when the Climate Controller C-46 is working stand-alone.

     If this bus mode is selected, then proceed with section 8.7.1 Bus master and No bus modes.

8.7.1 Bus master and No bus modes

To display the **Bus master** or **No bus** screen:

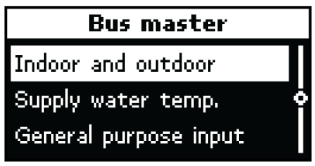
1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > H/C switchover > Bus master

   or

   Uponor > Main menu > Control settings > H/C switchover > No bus

   Example screen:



2. The next screen gives a number of alternatives of controlling method for the H/C switchover function.

   Select one of the following alternatives and press **OK**:

   - **Outdoor-indoor/supply temp.**

     When the **Outdoor-indoor/supply temp.** mode is selected, then continue with section 8.7.2 Outdoor-indoor/supply temp. to set the required parameters.

   - **Supply temp. active**

     When the **Supply temp. active** mode is selected, then continue with section 8.7.3 Supply water temp. to set the required parameters.

   - **General purpose input**

     This alternative is used when the heating/cooling switchover function is controlled from an external source.

   - **Heating**

     This alternative sets the Climate Controller C-46 permanently to heating mode.

   - **Cooling**

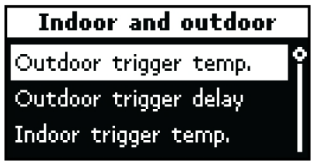
     This alternative sets the Climate Controller C-46 permanently to cooling mode.

8.7.2 Outdoor-indoor/supply temp.

When the **Outdoor-indoor/supply temp.** mode is selected, then the following parameters must be set:

1. Select **Outdoor trigger temp.** and press **OK**.

   Set the parameter to the required value and press **OK**.



   - Default setting: 20 °C
   - Setting range: 5–30 °C
   - Setting accuracy: 1 °C

2. Select **Outdoor trigger delay** and press **OK**.

   Set the parameter to the required value and press **OK**.

   - Default setting: 24 h
   - Setting range: 1 – 48 h
   - Setting accuracy: 1 h

3. Select **Indoor trigger temp.** and press **OK**.

   Set the parameter to the required value and press **OK**.

   - Default setting: 22 °C
   - Setting range: 5 – 30 °C
   - Setting accuracy: 1 °C

4. Select **Indoor trigger delay** and press **OK**.

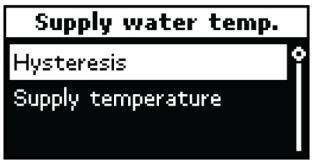
   Set the parameter to the required value and press **OK**.

   - Default setting: 24 h
   - Setting range: 1 – 48 h
   - Setting accuracy: 1 h

8.7.3 Supply water temp.

When the **Supply temp. active** mode is selected, then the following parameters must be set:

1. Select **Supply temperature** and press **OK**.



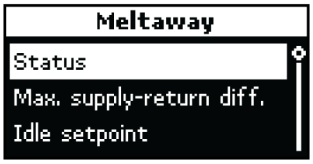
   Set the parameter to the required value and press **OK**.
   - Default setting: 18 °C
   - Setting range: 5–30 °C
   - Setting accuracy: 1 °C
2. Select **Hysteresis** and press **OK**.
   Set the parameter to the required value and press **OK**.
   - Default setting: 4 °C
   - Setting range: 1–10 °C
   - Setting accuracy: 1 °C

8.8 Meltaway

This section describes how to set parameters when the Climate Controller C-46 is working in **Meltaway** mode.

To set the meltaway parameters, do this:

1. Navigate through the screens using the navigation keys
   Uponor > Main menu > Control settings > Meltaway
   Example screen:



   The following list gives all possible sub-menus that can be accessed from the **Meltaway** menu. In several cases the parameter setting is the same as when using the Quick menu but with a slightly different layout.
   - Status
   - Max. supply – return diff.
   - Idle setpoint
   - Melting setpoint
2. Select **Status** and press **OK**.
   The screen displays the current Meltaway mode, **Idle** or **Melting**.
3. Select **Max. supply – return diff.** and press **OK**.
4. Select the desired setting and press **OK**.
   - Default setting: 20 °C
   - Setting range: 3–45 °C
   - Setting accuracy: 1 °C
5. Select **Idle setpoint**.
6. Select the desired setting and press **OK**.
   - Default setting: 8 °C
   - Setting range: 3–30 °C
   - Setting accuracy: 1 °C
7. Select **Melting setpoint supply**.
8. Select the desired setting and press **OK**.
   - Default setting: 30 °C
   - Setting range: 3–45 °C
   - Setting accuracy: 1 °C

8.9 Advanced control

The following screens are accessible from the **Advanced control** menu. Which of the screens that are accessible is dependent of the access level selected for the Climate Controller C-46. See section 8.12.1 Access level, page 38.

1. In the **Advanced control** menu, select the required item and press **OK**.
   - Operating mode, section 8.9.1, page 31
   - Control response, section 8.9.2, page 32
   - Filtering temp. constant, section 8.9.3, page 32
   - Mixing valve manual operation, section 8.9.6, page 33
   - Frost protection, section 8.9.4, page 32
   - Mixing valve, section 8.9.5, page 33
   - Mixing valve manual operation, section 8.9.6, page 33
   - Pump manual operation, section 8.9.7, page 33
   - Valve and pump exercise, section 8.9.8, page 33
   - Pump management, section 8.9.9, page 34

8.9.1 Operating mode (select)

This section describes how to select the operating mode of the Climate Controller C-46.

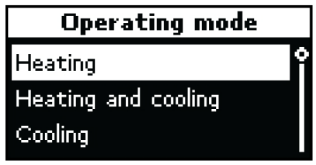
A screen used for selecting the operating mode is part of the initial set-up wizard of the Climate Controller C-46 during installation. See section 6.2.3 Operating mode, page 16.

To display the operating mode status that is selected, see section 8.2.1 Operating mode, page 22.

To change the operating mode after initial set-up, the access level must first be set to **Installer**. See section 8.12.1 Access level, page 38.

To change the operating mode, do this:

1. Navigate through the screens using the navigation keys
   Uponor > Main menu > Control settings > Advanced > Operating mode
   Example screen:



2. Select the required operating mode:
   - Heating
   - Heating and Cooling
   - Cooling
   - Meltaway
3. Confirm the selection of the operating mode by selecting **Yes** and pressing **OK**.
4. Continue the procedure as described in section 6.2.3 Operating mode, page 16.

8.9.2 Control response

The **Control response** parameters are used to adjust the control loop in the system.

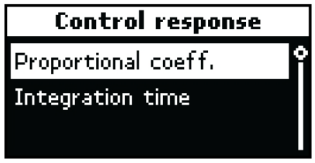
NOTE!
It is recommended that at least one of the parameters is set above zero.

To set the **Control response** parameters:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Control response

   Example screen:



2. Select the **Proportional coeff.** parameter.

   This parameter defines how fast the system shall respond when the measured temperature differs from the setpoint value.

   - Default setting: 0.5
   - Setting range: 0.1-2.0, 0 = inactive
   - Setting accuracy: 0.1

   Rule of thumb:

   - Increase the parameter to get a faster response
   - Decrease the parameter to get a slower response

3. Select the **Integration time** parameter.

   This parameter defines how fast the system shall respond when the measured temperature differs over time from the setpoint value.

   - Default setting: 80 min
   - Setting range: 1-200 min, 0 = inactive
   - Setting accuracy: 1 min

   Rule of thumb:

   - Decrease the parameter to get a faster response
   - Increase the parameter to get a slower response

8.9.3 Filtering temp. constant

The **Filtering temp. constant** parameter is only used with an outdoor sensor. It defines the filtering period when the Climate Controller C-46 measures the mean value of the readings from the outdoor sensor.

To set the **Filtering temp. constant** parameter:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Filtering temp. constant

   Example screen:

2. Select the desired setting.
   - Default setting: 10 min
   - Setting range: 1–100 min
   - Setting accuracy: 1 min
3. Confirm the setting by pressing **OK**.

8.9.4 Frost protection

The **Frost protection** function protects the installation from freezing. Frost protection works in both heating and cooling modes.

To avoid freezing, the Climate Controller C-46 checks that the supply water temperature does not go below the set **Min. supply temp.** If the supply water temperature goes below the set limit, then the Climate Controller C-46 goes into active mode (exiting standby mode or deactivated status), the circulation pump is started, and an alarm is trigged.

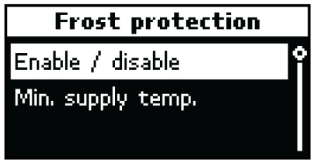
NOTE!
Uponor recommends that the frost protection function is always enabled.

To set the frost protection parameters:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Frost protection

   Example screen:



2. Select **Enable/disable**, then select the required mode and press OK.

   Note: The default setting is **Enable**.

3. Select **Min. supply temp.**
4. Set the parameter to the required value and press **OK**.
   - Default setting: 5 °C
   - Setting range: 5–15 °C
   - Setting accuracy: 1 °C

8.9.5 Mixing valve

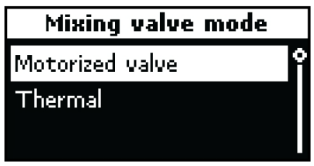
The **Mixing valve** menu is used to select between thermal and motorized actuator to control the mixing valve.

To set the **Mixing valve** parameters:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Mixing valve

   Example screen:



2. Select **Mixing valve mode**.
3. Select as required and press **OK**.
   - Default setting: Motorized valve
   - Alternative setting: Thermal
4. If motorized valve is selected, then set the **Neutral zone** parameter. The parameter defines how much the supply temperature can differ from the setpoint before the actuator motor is engaged.

   Set the parameter to the required value and press **OK**.
   - Default setting: 1 °C
   - Setting range: 0-5 °C
   - Setting accuracy: 1 °C

8.9.6 Mixing valve manual operation

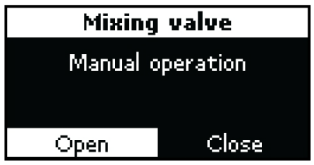
The **Mixing valve manual operation** function is only available if the Climate Controller C-46 is set in Standby mode, see section 8.4.1 Standby mode, page 24.

To use the **Mixing valve manual operation** function:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Mixing valve manual operation

   Example screen:



2. Select the required operation and press **OK**.

   Operation alternatives:
   - **Open valve**, the mixing valve opens fully and stays open
   - **Close valve**, the mixing valve closes fully and stays closed

8.9.7 Pump manual operation

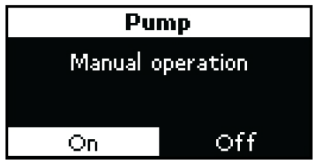
The **Pump manual operation** function is only available if the Climate Controller C-46 is set in Standby mode, see section 8.4.1 Standby mode, page 24.

To use the **Pump manual operation** function:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Mixing valve manual operation

   Example screen:



2. Select the required operation and press **OK**.

   Operation alternatives:
   - On
   - Off

8.9.8 Valve and pump exercise

This function is used to define a scheme for exercising the mixing valve or both the mixing valve and the pump during periods when the system is in standby mode. The exercises prevent the mixing valve and the pump from getting stuck.

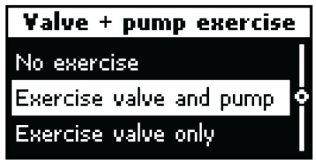
During an exercise the mixing valve will perform a complete open-and-close cycle and the pump will run during 3 minutes.

To set the **Valve and pump exercise** parameters, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Valve and pump exercise

   Example screen:



2. Select one of the following alternatives and press **OK**:
   - **No exercise**

     This alternative resets any existing exercise scheme.

     If this bus mode is selected, then this procedure is finished.
   - **Exercise valve and pump**

     This alternative offers the user to define the time of the week when the exercise will be activated.

     If this bus mode is selected, then proceed with step 3.
   - **Exercise valve only**

     This alternative offers the user to define the time of the week when the exercise will be activated.

     If this bus mode is selected, then proceed with step 3.
3. In the next screen, **Exercise time**, set the day of the week and the time of the day when the exercise shall be activated and press **OK** to confirm.

8.9.9 Pump management

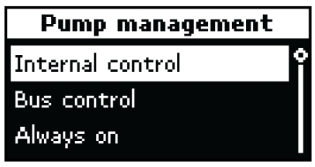
The **Pump management** menu is used to set how the circulation pump will be controlled.

To select the **Pump management** control function, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Control settings > Advanced control > Pump management

   Example screen:



2. Select one of the following alternatives:
   - **Internal ctrl**

     This alternative lets the Climate Controller C-46 fully control the circulation pump.
   - **Bus**

     This alternative is used when the circulation pump is controlled from the Controller C-56 Radio through the bus.
   - **Always on**

     This alternative is used to set the circulation pump always running.
   - **Always off**

     This alternative means that the circulation pump is not controlled by the climate system.

     In this case it must be controlled by an external source, for example an on-off switch.

8.10 ECO mode

The default setting in the Climate Controller C-46 is comfort (COMF) mode. In comfort mode the system keeps a constant temperature in the room at the setpoint temperature. If an indoor thermostat is connected to the Climate Controller C-46, then the indoor setpoint temperature is used. In all other cases the supply setpoint temperature is used.

In economy (ECO) mode, the temperature setpoint is automatically set back for periods of the day when the comfort temperature is not needed, for example during the night or when no one is present in the house.

For more information about ECO profiling, see section 10.1 Economy and comfort modes, page 44.

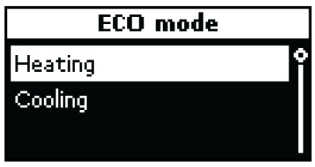
This section describes how to make all settings necessary for the switching between comfort and economy modes.

To display the **ECO mode** menu:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode

   Example screen:



2. In the **ECO mode** menu, select the required item and press **OK**.
   - Heating, proceed with section 8.10.1, page 34.
   - Cooling, proceed with section 8.10.2, page 36.

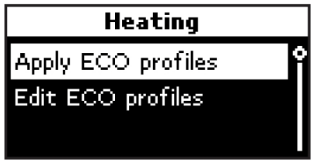
8.10.1 Heating

To display the **Heating** menu under **ECO mode**:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode > Heating

   Example screen:



2. In the **Heating** menu, select the required item and press **OK**.

   Note: Items in the list below depend on the selected operating mode and system configuration.
   - Supply temp. setback, , page 34
   - Apply ECO profiles, , page 35
   - Edit ECO profiles, , page 35

Supply temp. setback

This function can be used when an Interface I-76 is connected to a Controller C-56 Radio, which in its turn is connected to the Climate Controller C-46. In this case the Interface I-76 controls the switching from comfort to economy mode and back, but the Climate Controller C-46 controls the supply temperature setback.

To modify the temperature setback:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode > Heating > Supply temp. setback

   Example screen:

2. Select the amount of supply temperature setback and press **OK**.
   - Default setting: 2 °C
   - Setting range: 0–10 °C
   - Setting accuracy: 1 °C

Apply ECO profiles

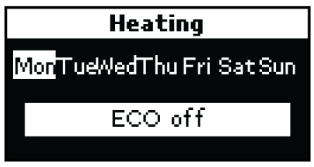
This function is used to set which ECO profile to apply for each day of the week.

To set the ECO profiles:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode > Heating > Apply ECO profiles

   Example screen:



2. Use the ◄ and ► keys to select which day of the week the new ECO profile shall be applied to.
3. Make a *short* click with the ▼ key to mark the selected day.
4. If more than one day shall be applied with the same ECO profile, then select the next day for the same ECO profile and make a *short* click with the ▼ key.

   Proceed in the same manner until all required days have been marked.
5. Press the key for several seconds until the screen **ECO profiles list** is displayed.
6. Select the type of ECO profile to apply. The following ECO profiles are available:
   - ECO off
   - ECO all
   - ECO night and day
   - ECO night
   - ECO Custom
7. Press **OK** to confirm the selection.
8. Repeat steps 2. to 7. until all days of the week have been set to an ECO profile.

Edit ECO profiles

This function is used to modify the times when the Climate Controller C-46 switches between comfort and economy modes. The settings are made with 30 minutes accuracy.

The example below shows how to modify the ECO custom profile. However, it is possible to modify any of the five ECO profiles.

To modify an ECO profile:

1. Navigate through the screens using the navigation keys:

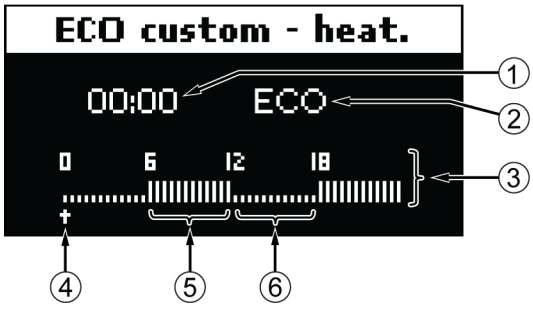
   Uponor > Main menu > ECO mode > Heating > Edit ECO profiles

   Example screen:

2. Select the **ECO profile** to modify and press **OK**.

   The following ECO profiles are available:
   - ECO off
   - ECO all
   - ECO night and day
   - ECO night
   - ECO Custom

The next screen displays graphically the time scheme for switching between comfort and economy modes:



Pos.	Description
1	Time setting at the time cursor position, HH:mm
2	ECO or COMF indicator at the time cursor position
3	Time cursor, 30 minute step
4	High columns indicating comfort mode (COMF)
5	Short columns indicating economy mode (ECO)
6	Time scale

3. Move the time cursor along the time scale with the ◄ and ► keys until the required 30-minutes time interval is reached.
4. Modify the mode setting from comfort to economy, or the other way around, using the ▼ and ▲ keys.
5. Repeat steps 3. to 4. until the ECO profile is modified as required.
6. Press **OK** to display the next screen, **Supply setback temp.**

   Note: If an indoor sensor is used, the screen displayed is **Indoor setback temp.**

7. Select the required setback temperature.
   - Default setting, supply: 2 °C
   - Default setting, indoor: 4 °C
   - Setting range, supply and indoor: 0–10 °C
   - Setting accuracy: 1°C
8. Press **OK** to confirm the new setting.

8.10.2 Cooling

To display the **Cooling** menu under **ECO mode**:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode > Cooling

   Example screen:

2. In the **Cooling** menu, select the required item and press **OK**.
   - Supply temp. setback, , page 36
   - Apply ECO profiles, , page 36
   - Edit ECO profiles, , page 36

Supply temp. setback

This function can be used when an Interface I-76 is connected to a Controller C-56 Radio, which in its turn is connected to the Climate Controller C-46. In this case the Interface I-76 controls the switching from comfort to economy mode and back, but the Climate Controller C-46 controls the supply temperature setback.

To modify the temperature setback:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode > Cooling > Supply temp. setback

   Example screen:

2. Select the amount of supply temperature setback and press **OK**.
   - Default setting: 2 °C
   - Setting range: 0–10 °C
   - Setting accuracy: 1 °C

Apply ECO profiles

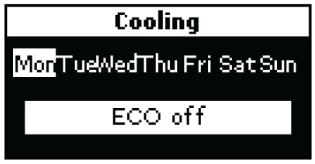
This function is used to set which ECO profile to apply for each day of the week.

To set the ECO profiles:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode > Cooling > Apply ECO profiles

   Example screen:



2. Use the ◀ and ▶ keys to select which day of the week for which the new ECO profile shall apply.
3. Make a *short* click with the ▼ key to mark the selected day.
4. If more than one day shall be applied with the same ECO profile, then select the next day for the same ECO profile and make a *short* click with the ▼ key.

   Proceed in the same manner until all required days have been marked.
5. Press the key for several seconds until the screen **ECO profiles list** is displayed.
6. Select the type of ECO profile to apply. The following ECO profiles are available:
   - ECO off
   - ECO all
   - ECO night and day
   - ECO night
   - ECO Custom
7. Press **OK** to confirm the selection.
8. Repeat steps 2. to 7. until all days of the week have been set to an ECO profile.

Edit ECO profiles

This function is used to modify the times when the Climate Controller C-46 switches between comfort and economy modes. The settings are made with 30 minutes accuracy.

The example below shows how to modify the ECO custom profile. However, it is possible to modify any of the five ECO profiles.

To modify an ECO profile:

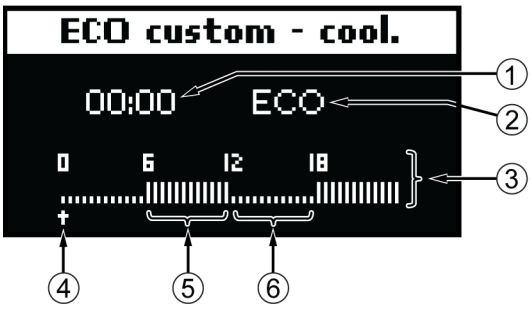
1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > ECO mode > Cooling > Edit ECO profiles

   Example screen:

2. Select the **ECO profile** to modify and press **OK**. The following ECO profiles are available:
   - ECO off
   - ECO all
   - ECO night and day
   - ECO night
   - ECO Custom

The next screen displays graphically the time scheme for switching between comfort and economy modes:



Pos.	Description
1	Time setting at the time cursor position, HH:mm
2	ECO or COMF indicator at the time cursor position
3	Time cursor, 30 minute step
4	High columns indicating comfort mode (COMF)
5	Short columns indicating economy mode (ECO)
6	Time scale, every 6 hours indicated with digits, high or short columns for every 30 minutes

3. Move the time cursor along the time scale with the ◀ and ▶ keys until the required 30-minutes time interval is reached.
4. Modify the mode setting from comfort to economy, or the other way around, using the ▼ and ▲ keys.
5. Repeat steps 3. to 4. until the ECO profile is modified as required.
6. Press **OK** to display the next screen, **Supply setback temp.**

   Note: If an indoor sensor is used, the screen displayed is **Indoor setback temp.**

7. Select the required setback temperature.
   - Default setting, supply: 2 °C
   - Default setting, indoor: 4 °C
   - Setting range, supply and indoor: 0–10 °C
   - Setting accuracy: 1°C
8. Press **OK** to confirm the new setting.

8.11 Alarms

The alarms menu allows displaying either the battery alarms only or a complete alarms list.

8.11.1 All alarms

The **All alarms** screen displays all unresolved alarms and an entry to clear the alarms.

Alarm list

To display the alarm list:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Alarms > All alarms > Alarm list

   Example screen:

Clear alarm list

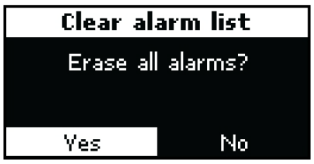
To clear the alarm list:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Alarms > All alarms > Alarm list
2. Select **Clear alarm list**.

   Example screen:
3. Select **Yes** or **No** and press **OK**.

   Note that only resolved alarms can be cleared.



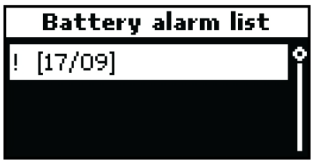
8.11.2 Battery alarms

To display the **Battery alarm list**:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > Alarms > Battery alarms > Battery alarm list

   Example screen:



To clear the **Battery alarm list**, see section Clear alarm list, page 37.

8.12 General settings

The following screens are accessible from the **General settings** menu. Which of the screens that are accessible is dependent on the access level selected for the Climate Controller C-46. See section 8.12.1 Access level, page 38.

1. In the **General settings** menu, select the required item and press **OK**.
   - Access level, section 8.12.1, page 38
   - Clock settings, section 8.12.2, page 38
   - Language, section 8.12.3, page 39
   - Temperature unit, section 8.12.4, page 39
   - Backlight, section 8.12.5, page 39
   - Log, section 8.12.6, page 39
   - General purpose output, section 8.9.6, page 33
   - General purpose output status, section 8.12.8, page 40
   - Controller ID, section 8.12.9, page 40
   - Software version, section 8.12.10, page 40
   - Radio links, section 8.13, page 40

8.12.1 Access level

The **Basic** access level includes all functions necessary for daily use. To reach functions to change or adjust the set-up of the system, the **Installer** access level is used.

To change the access level, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Access level

   Example screen:

2. Select the required access level and press **OK**.

8.12.2 Clock settings

The following functions are accessible from the **Clock settings** menu:

- Set time and date, section
- Time format, section
- Date format, section
- Auto daylight saving, section

Set time and date

The screen for setting time and date is always selected during the initial set-up procedure of the Climate Controller C-46 during installation. See section 6.2.2 Set time and date, page 16.

To change time and date after initial set-up, the Installer access level must first be set to **Installer**. See section 8.12.1 Access level, page 38.

To set time and date, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Clock settings > Set time and date

   Example screen:

2. Set the time and date fields to the correct values and press **OK**.

Time format

It is possible to choose between showing the time in 24-hour notation or 12-hour AM/PM notation. The default is 24-hour notation.

To change time notation after initial set-up, the access level must first be set to **Installer**. See section 8.12.1 Access level, page 38.

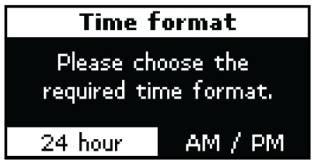
To change the time notation, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Clock settings > Time format

   Example screen:

2. Select the desired time format and press **OK**.



Date format

Selecting the date format

It is possible to choose between the following date formats:

- DD/MM/YYYY
- YYYY/MM/DD
- DD Mmm YYYY
- YYYY Mmm DD

To change the date format, the access level must first be set to **Installer**. See section 8.12.1 Access level, page 38.

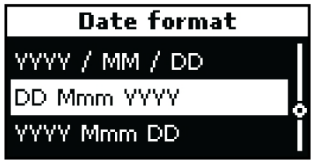
To select the date format, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Clock settings > Date format

   Example screen:

2. Select the desired date format and press **OK**.



Auto daylight saving

It is possible to set the Climate Controller C-46 to automatically adjust the internal clock to the daylight saving time.

The following schedules for daylight saving time can be chosen:

- European zone

  Select this alternative to shift between summer and winter times using the schedule defined by the European Union.

- Fixed dates

  Select this alternative to set dates to shift between summer and winter times that are different than the European zone.

- Cancel daylight saving

  Select this alternative to not use daylight saving time in Climate Controller C-46.

To select the daylight saving schedule, do this:

1. Navigate through the screens using the navigation keys

   Uponor > Main menu > General settings > Clock settings > Auto daylight saving

   Example screen:

2. Select the required daylight saving mode and press **OK**.

   If **Fixed date** is selected, continue with below.

Setting fixed dates for daylight saving time

To set fixed dates for daylight saving time, do this:

1. Set the required start and end dates and press **OK**.

8.12.3 Language

The **Language** menu can be used to change the language used on the display of the Climate Controller C-46:

1. Navigate through the screens using the navigation keys

   Uponor > Main menu > General settings > Language

   Example screen:

2. Select the required language.

   Each language entry is presented in its own language as well as in English. The following languades are selectable:

   - English (default language)
   - Svenska / Swedish
   - Dansk / Danish
   - Norsk / Norwegian
   - Suomi / Finnish
   - Deutsch / German
   - Nederlands / Dutch
   - Français / French
   - Italiano / Italian
   - Español / Spanish
   - Portoguês / Portoguese

8.12.4 Temperature unit

Temperatures displayed on the screen can be presented using either the Celsius scale or the Fahrenheit scale.

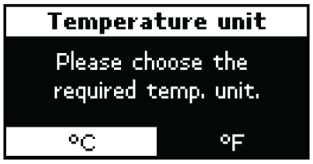
To change the temperature scale:

1. Navigate through the screens using the navigation keys

   Uponor > Main menu > General settings > Temperature unit

   Example screen:

2. Select the desired temperature scale and press **OK**.



8.12.5 Backlight

The backlight of the screen can be set in the following modes:

- Always on
- Dimmed when inactive
- Off when inactive

To change the backlight mode, do this:

1. Navigate through the screens using the navigation keys

   Uponor > Main menu > General settings > Backlight

   Example screen:

2. Select the required backlight mode and press **OK**.

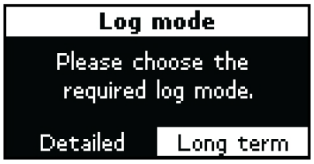
8.12.6 Log mode

To select the log mode, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Log mode

   Example screen:



2. Select the required log mode, **Detailed** or **Long term**, and press OK.

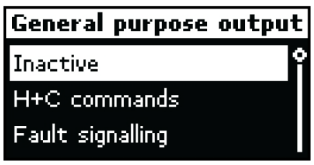
8.12.7 General purpose output

To select the general purpose output mode, do this:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > General purpose output > Mode

   Example screen:



2. Select the required general purpose output mode.

   The following alternatives are available:

   - Inactive
   - H+C commands
   - Dehumidification
   - Fault signalling
   - Boiler demand

3. Confirm the selection by pressing **OK**.

8.12.8 GPO status

To display the General purpose output status:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > General purpose output

   Example screen:

   The General purpose output is set to off.

8.12.9 Controller ID

When one Controllers C-56 Radio are connected to the Climate Controller C-46, it is possible to set their adresses in Climate Controller C-46.

To display the Controller ID menu:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Controller ID

   Example screen:

2. Select the required item and press **OK**.

Set controller ID

To set a controller ID:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Controller ID > Set controller ID

   Example screen:

   The pointers **>** and **<** are flashing on the first row.

2. Push the test button on the first Controller C-56 Radio.

   When the Controller C-56 Radio is identified pointers stop flashing and a new pair of pointer start flashing on the next row.

3. Repeat step 2. for the remaining Controllers C-56 Radio.
4. When all Controllers C-56 Radio are identified, press **OK** to confirm.

Reset controller ID

To reset all controller IDs:

1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Controller ID > Reset controller ID

   Example screen:

2. Select **Yes** or **No** and press **OK** to confirm.

8.12.10 Software version

To display the software version of Climate Controller C-46, do this:

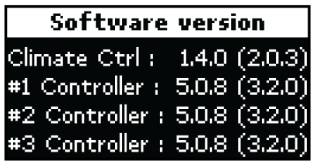
1. Navigate through the screens using the navigation keys:

   Uponor > Main menu > General settings > Software version

   Example screen:

   X.X.X = software version

   (X.X.X) = hardware version



8.13 Radio links

The radio links functions can be used when a radio antenna is connected to the Climate Controller C-46 and one or more thermostats or Relative Humidity Sensors H-56 are installed in the house.

The following screens are accessible from the **Radio links** menu.

1. In the **Radio links** menu, select the required item and press **OK**.

   Example screen:

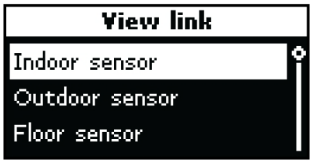
2. Select the required item and press **OK**.
   - View links, section 8.13.1, page 41
   - Add links, section 8.13.2, page 41
   - Reset all links, section 8.13.3, page 41
   - Test radio range, section 8.13.4, page 41

8.13.1 View links

The **View links** menu is used to display which sensors that are linked by radio to the Climate Controller C-46. It is also possible to display the working conditions for the radio linked sensors.

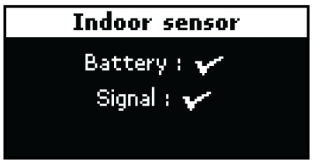
To display the **View links** menu:

1. Navigate through the screens using the navigation keys:
   Uponor > Main menu > General settings > View links
   Example screen:



2. Select the desired sensor and press **OK**.
   The next screen displays the sensor conditions for battery and signal.
   - ✓ = battery or signal is good
   - ✗ = battery or signal is bad

   Example screen:

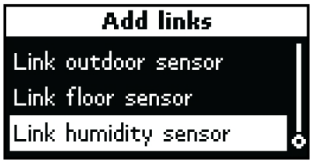


8.13.2 Add links

The **Add links** function is used to establish radio links between radio sensors and the Climate Controller C-46.

To add links to the Climate Controller C-46:

1. Navigate through the screens using the navigation keys:
   Uponor > Main menu > General settings > Radio links > Add links
   Example screen:



2. Select the required sensor and press **OK**.
   The next screen displays:
   Add link
   Wait link
3. Initiate the linking process from the sensor.
   The screen now displays:
   Add link
   Link in progress ...
4. When the linking process is finished the following screen is shown:

   In case the linking process fails, the following is displayed:
   Link failure
   In any case, press **OK** to return to the **Add links** menu.

8.13.3 Reset all links

To reset all established links:

1. Navigate through the screens using the navigation keys:
   Uponor > Main menu > General settings > Radio links > Reset all links
   Example screen:

2. Select **Yes** or **No** as desired and press **OK**.

8.13.4 Test radio range

The purpose with the **Test radio range** function is to verify that the radio signal from the sensor has a signal strength with a good margin when received by the Climate Controller C-46.

To perform the **Test radio range**:

1. Navigate through the screens using the navigation keys:
   Uponor > Main menu > General settings > Radio links> Test radio range
   Example screen:

2. Press **OK**.
   The next screen displays:
   Test radio range
   Waiting frame reception ...
3. Start the test from the sensor.
   - If test is successful, the following screen is displayed:

   - If the test fails, the Climate Controller C-46 will wait until the test time out is reached and the Uponor screen is displayed again.

9 Menu structure

The tables below shows how to reach all menus in the Climate Controller C-46.

Climate Controller C-46 screen	Referenced section
Uponor	section 6.1.5 Display, page 15
⌞ Main menu	section 8.1 Main menu, page 22
├ Climate controller	section 8.2 Climate controller (menu), page 22
├ Operating mode	section 8.2.1 Operating mode, page 22
├ Supply temperature	section 8.2.2 Supply temperature, page 22
├ Return temperature	section 8.2.3 Return temperature, page 22
├ Average temperature	section 8.2.4 Average temperature, page 23
├ Outdoor temperature	section 8.2.5 Outdoor temperature, page 23
├ Indoor temperature	section 8.2.6 Indoor temperature, page 23
⌞ Relative humidity	section 8.2.7 Relative humidity, page 23
├ Zones	section 8.3 Zones, page 23
├ Control settings	section 8.4 Control settings, page 23
├ Standby mode	section 8.4.1 Standby mode, page 24
├ Heating	section 8.5 Heating, page 24
├ Supply setpoint	section 8.5.1 Supply setpoint, page 24
├ Indoor setpoint	section 8.5.2 Indoor setpoint, page 24
├ Average setpoint	section 8.5.3 Average setpoint, page 25
├ Min./max. supply	section 8.5.4 Min./Max. supply, page 25
├ T-slope	section 8.5.5 T-slope, page 25
├ T-adjustment	section 8.5.6 T-adjustment, page 25
├ Supply information	section 8.5.7 Supply information, page 26
├ Indoor sensor influence	section 8.5.8 Indoor sensor influence, page 26
├ Indoor sensor mode	section 8.5.9 Indoor sensor mode, page 26
⌞ Heating deactivation	section 8.5.10 Heating activation, page 26
├ Summer shut-off	section Summer shut-off, page 26
⌞ Always active	section 8.5.10 Heating activation, page 26
⌞ Cooling	section 8.6 Cooling, page 27
├ Supply setpoint	section 8.6.1 Supply setpoint, page 27
├ Indoor setpoint	section 8.6.2 Indoor setpoint, page 27
├ Min./max. supply	section 8.6.3 Min./Max. supply, page 28
├ Indoor sensor influence	section 8.6.4 Indoor sensor influence, page 28
├ Dew point	section 8.6.5 Dew point, page 28
├ Cooling deactivation	section 8.6.6 Cooling activation, page 29
├ Winter shut-off	section Winter shut-off, page 29
⌞ Always active	section 8.6.6 Cooling activation, page 29
⌞ Dehumidifier control	section 8.6.7 Dehumidifier control, page 29
Ⓐ Ⓑ	

A = Main menu

B = Main menu > Control settings

Ⓐ Ⓑ

- H/C switchover — section 8.7 H/C switchover, page 30
  - Bus master — section 8.7 H/C switchover, page 30
  - Bus slave — section 8.7 H/C switchover, page 30
  - No bus — section 8.7 H/C switchover, page 30
- Meltaway — section 8.8 Meltaway, page 31
- Advanced control — section 8.9 Advanced control, page 31
  - Operating mode — section 8.9.1 Operating mode (select), page 31
  - Control response — section 8.9.2 Control response, page 32
  - Filtering temp. constant — section 8.9.3 Filtering temp. constant, page 32
  - Frost protection — section 8.9.4 Frost protection, page 32
  - Mixing valve — section 8.9.5 Mixing valve, page 33
  - Mixing valve man. op. — section 8.9.6 Mixing valve manual operation, page 33
  - Pump manual operation — section 8.9.7 Pump manual operation, page 33
  - Valve + pump exercise — section 8.9.8 Valve and pump exercise, page 33
  - Pump management — section 8.9.9 Pump management, page 34
- ECO mode — section 8.10 ECO mode, page 34
  - Heating — section 8.10 ECO mode, page 34
  - Cooling — section 8.10 ECO mode, page 34
- Alarms — section 8.11 Alarms, page 37
  - Battery alarms — section 8.11.2 Battery alarms, page 37
  - All alarms — section 8.11.1 All alarms, page 37
- General settings — section 8.12 General settings, page 37
  - Access level — section 8.12.1 Access level, page 38
  - Clock settings — section 8.12.2 Clock settings, page 38
    - Set time and date — section Set time and date, page 38
    - Time format — section Time format, page 38
    - Date format — section Date format, page 38
    - Auto daylight saving — section Auto daylight saving, page 38
  - Language — section Auto daylight saving, page 38
  - Temperature unit — section 8.12.4 Temperature unit, page 39
  - Backlight — section 8.12.5 Backlight, page 39
  - Log — section 8.12.6 Log mode, page 39
  - General purpose output — section 8.12.7 General purpose output, page 39
  - Controller ID — section 8.12.9 Controller ID, page 40
  - Software version — section 8.12.10 Software version, page 40
  - Radio links — section 8.13 Radio links, page 40
    - View links — section 8.13.1 View links, page 41
    - Add links — section 8.13.2 Add links, page 41
    - Reset all links — section 8.13.3 Reset all links, page 41
    - Test radio range — section 8.13.4 Test radio range, page 41

10 Hints and examples

This section describes a number of hints and examples to help the user to set up the heating and/or cooling system.

10.1 Economy and comfort modes

The economy mode (ECO) is used to save energy. In heating mode, the economy mode reduces room temperatures with a given setback temperature. In cooling mode, the temperature is increased. Different economy profiles may be applied for the days of the week.

NOTE!
This description of using the economy mode stipulates that the Climate Controller C-46 is working in stand-alone mode.

If the Interface I-76 is connected to a Controller C-56 Radio, which in its turn is connected to the Climate Controller C-46, then the economy and comfort modes are controlled by the Interface I-76.

However, a supply setback temperature can still be set from the Climate Controller C-46, see section 8.10 ECO mode, page 34.

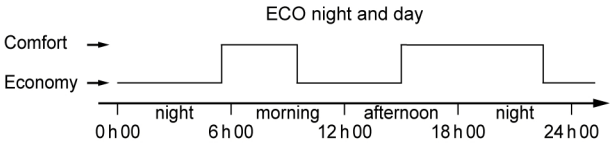
Comfort mode

The default setting in the Climate Controller C-46 is comfort mode (COMF). In comfort mode the system keeps a constant temperature in the room at the setpoint temperature. If an indoor thermostat is connected to the Climate Controller C-46, then the indoor setpoint temperature is used. In all other cases the supply setpoint temperature is used.

Economy mode

In economy mode the temperature setpoint is automatically set back for periods of the day when the comfort temperature is not needed, for example during the night or when no one is present in the house.

The temperature is regulated between two different temperatures set for **comfort** mode and **economy** mode. See example below.



The diagram shows that the system delivers heating in comfort mode in the morning and afternoon and that the system enters economy mode during the night and in the middle of the day, when the house is normally empty.

Economy profiles

The Climate Controller C-46 provides five different economy profiles. These profiles can be applied in heating mode as well as in cooling mode. If the system is set up to handle both heating and cooling, it is possible to define different economy profiles for both.

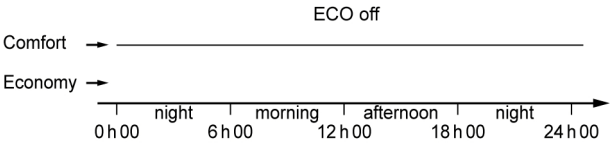
To apply economy profiles for each day of the week and to edit them, see section 8.10 ECO mode, page 34. In the event of a power failure, all economy profile settings are saved. However, language and date and time settings must be input again.

The following economy profiles are available:

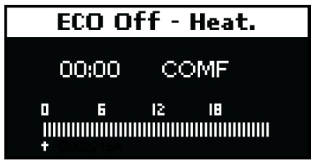
- Eco off
- Eco all
- Eco night
- Eco night and day
- Eco custom

10.1.1 Eco off mode

The default setting in the Climate Controller C-46 is **Eco off**, that is comfort mode at any time day and night, seven days a week. The diagram below illustrates this by indicating that the temperature is at the comfort level continuously.

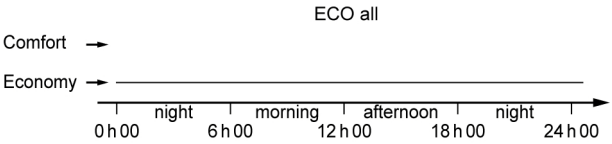


The figure to the right shows the **ECO off** screen for this case. The continuous comfort mode is indicated by all columns in full height.

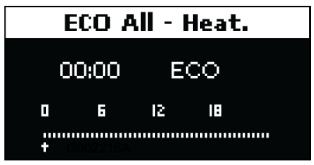


10.1.2 Eco all mode

When the Climate Controller C-46 is set to **Eco all** mode, this means that the temperature is constantly lowered with the temperature setback value. The diagram below illustrates this by indicating that the temperature is at the economy level continuously.

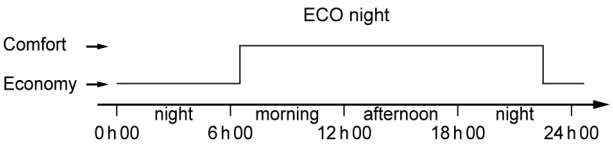


The figure to the right shows the **ECO all** screen for this case. The continuous economy mode is indicated by all columns at bottom level.



10.1.3 Eco night mode

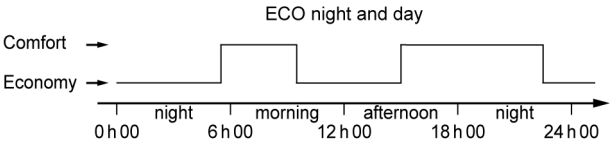
When the Climate Controller C-46 is set to **Eco night** mode, this means that the temperature is temporarily lowered with the temperature setback value during night. The diagram below illustrates this by indicating that the temperature is lowered to economy level between 22.30 hours and 06.30 hours.



The figure to the right shows the **ECO night** screen for this case. The comfort mode is indicated with columns at full height and the economy mode with columns at bottom level.

10.1.4 Eco night and day mode

When the Climate Controller C-46 is set to **Eco night and day** mode, this means that the temperature is temporarily lowered with the temperature setback value during night. The diagram below illustrates this by indicating that the temperature is lowered to economy level between 22.30 hours and 05.30 hours.



The figure to the right shows the **ECO night and day** screen for this case. The comfort mode is indicated with columns at full height and the economy mode with columns at bottom level.

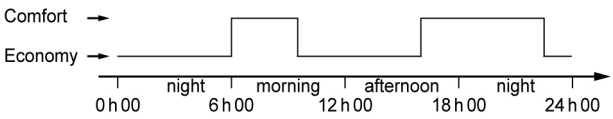
10.1.5 Operation example with economy mode

This section describes an example when economy mode is utilized with different schemes for the days in the week. For instructions describing how to apply and edit the economy profiles, see section section 8.10 ECO mode, page 34.

In this use case the following scheme is applied:

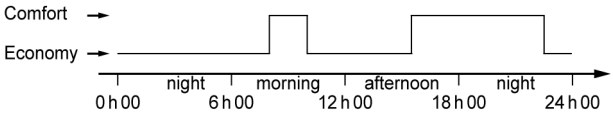
Monday Tuesday Wednesday	**Profile: Eco night and day**
00:00 – 06:00	Economy mode
06:00 – 09:30	Comfort mode
09:30 – 16:00	Economy mode
16:00 – 22:00	Comfort mode
22:00 – 24:00	Economy mode

The diagram below shows how the system switches between economy and comfort mode when using the **Eco night and day** profile.



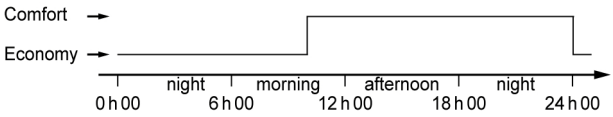
Thursday Friday	**Profile: Eco custom**
00:00 – 08:00	Economy mode
08:00 – 10:00	Comfort mode
10:00 – 15:30	Economy mode
15:30 – 22:30	Comfort mode
22:30 – 24:00	Economy mode

The diagram below shows how the system switches between economy and comfort mode when using the **Eco custom** profile .



Saturday Sunday	**Profile: Eco night**
00:00 – 08:00	Economy mode
08:00 – 24:00	Comfort mode

The diagram below shows how the system switches between economy and comfort mode when using the **Eco night** profile.



10.2 Adjusting the heat curve

When the Climate Controller C-46 is set in **Heating** mode and an outdoor sensor is connected, the heat curve is adjusted to achieve an even zone temperature.

10.2.1 Description

The two parameters **T-slope** and **T-adjustment** are used to adjust the heat curve:

- **T-slope:** This parameter is used to change the slope of the graph in a supply temperature–outdoor temperature diagram. See illustration below.

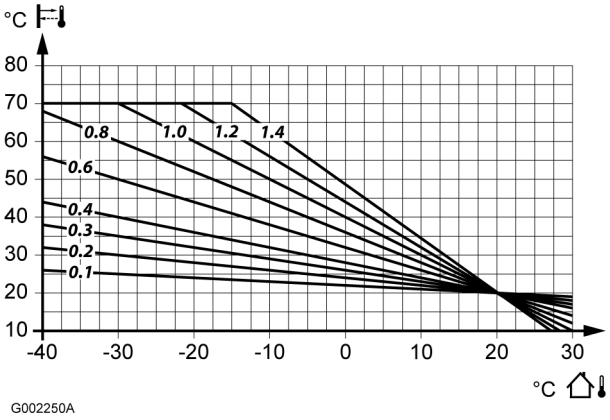
  For example, houses that are well insulated and are heated by a floor heating system require a gentle slope of the curve in the diagram.

  On the other hand, houses that are poorly insulated or are heated with radiators require a higher slope value.

  To change the T-slope parameter, see section 8.5.5 T-slope, page 25.
- **T-adjustment:** The curves in the diagram all pass through the point where outdoor and supply temperatures are both 20°C.

  The T-adjustment parameter is used to move the curves vertically. If the house is not warm enough at moderate outdoor temperatures, then it is recommended to increase the T-adjustment setting.

  To change the T-adjustment parameter, see section 8.5.6 T-adjustment, page 25.



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The diagram above shows a number of heat curves for **T-slope** parameter set between 0.2 and 1.4 and the **T-adjustment** parameter set to 0.

The heat curves are also limited by the parameters **Min., max. supply temp.** The default values for these parameters are 5 °C for the minimum supply temperature and 40 °C for the maximum supply temperature. In the diagram above, the parameter values 5 °C respectively 70 °C have been used to show the full potential of the system. See section 8.5.4 Min./Max. supply, page 25 for setting the parameters **Min., max. supply temp.**

10.2.2 Operation example

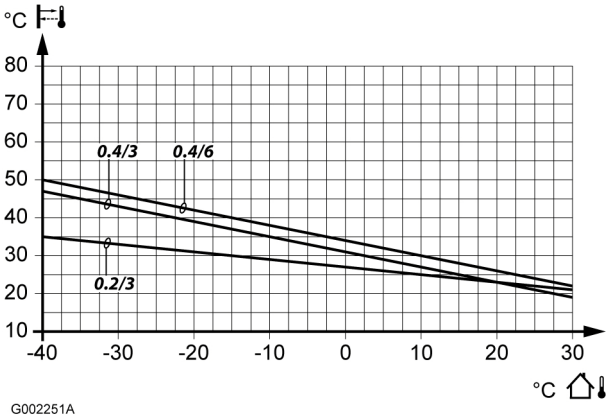
The following example describes how to adjust the heat curve after Climate Controller C-46 has been set in **Heating – outdoor controlled supply** mode.

Default settings

When the **Heating – outdoor controlled supply** mode has been selected, the Climate Controller C-46 is set up with the following default values:

- T-slope = 0.2
- T-adjustment = 3

In the diagram below, the default settings result in the heat curve labelled 0.2/3.



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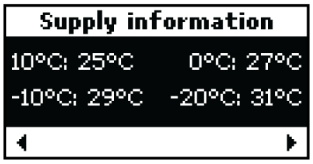
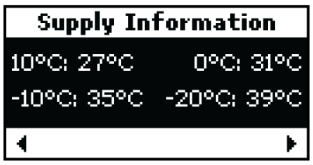
In the Quick menu, the **Supply information** screen displays this:



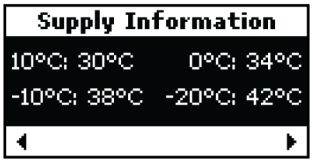
In this operation example it is found that the heating is insufficient at outdoor temperatures below the freezing point. To compensate for this, the **T-slope** parameter is increased from 0.2 to 0.4. The resulting heat curve is labelled 0.4/3 in the diagram above.

The Supply information screen now displays this:



Moreover, it is found that the indoor temperature is too low at moderate outdoor temperatures. To compensate for this, the **T-adjustment** parameter is increased from 3 to 6. The resulting heat curve is labelled 0.4/6 in the diagram above.

The resulting Supply information screen displays this:



10.3 Heating summer shut-off and cooling winter shut-off

The use of the heating summer shut-off and cooling winter shut-off features is described by a number of operation examples with instructions how to set up the system.

The operation examples below require that the following prerequisites are met:

- The Climate Controller C-46 is installed as a stand-alone unit
- The **Pump management** function is set to **Internal control** mode, see section 8.9.9 Pump management, page 34

The following operation examples are described below:

- Heating mode without summer shut-off, section 10.3.1, page 47
- Heating mode with summer shut-off, section 10.3.2, page 47
- Cooling mode without winter shut-off, section 10.3.3, page 48
- Cooling mode with winter shut-off, section 10.3.4, page 48
- Heating and cooling mode without season shut-offs, section 10.3.5, page 49
- Heating and cooling mode witht season shut-offs, section 10.3.6, page 49

10.3.1 Heating mode without summer shut-off

The diagram in the figure below, labelled **Heating mode without summer shut-off**, illustrates an operation example with the following setup:

- Operating mode is set to heating, see section 8.9.1 Operating mode (select), page 31
- Summer shut-off is not defined

Period P1: During this period, which covers the full year, the circulation pump is running continuously.

10.3.2 Heating mode with summer shut-off

The diagram in the figure below, labelled **Heating mode with summer shut-off**, illustrates an operation example with the following setup:

- Operating mode is set to heating, see section 8.9.1 Operating mode (select), page 31
- Summer shut-off is set up for the warmer period of the year. See section Summer shut-off, page 26 for instructions on how to define the shut-off period.

Period P1: During this period, which in this example covers the months September to March, the circulation pump is running continuously.

Period P2, summer shut-off: During this period, which in this example covers the months April to August, the following scheme applies:

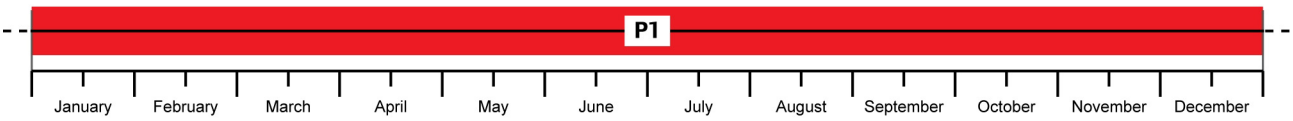
1. When the period P2 starts, the circulation pump is running continuously.
2. When all conditions for summer shut-off are met, the mixing valve closes and the circulation pump stops.

   Shut-off conditions:
   - The summer shut-off date is passed, for example 1 April.
   - The outdoor temperature has risen above the heating deactivation limit, for example 18°C
   - The delay period for the deactivation temperature has expired, for example 24 hours
3. In case there is a brief period with colder weather during the summer shut-off period, the system automatically turns on again with heating supplied and circulation pump running.

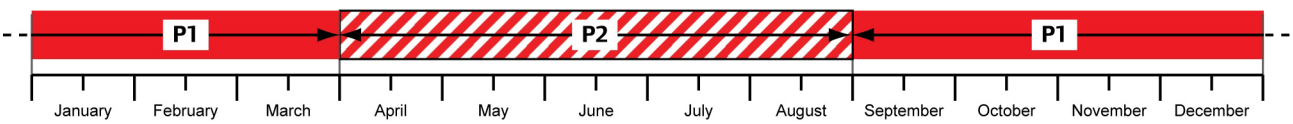
   Turn-on conditions:
   - The outdoor temperature has fallen below the heating activation limit, in this example 17°C

     Note that the system uses a temperature hysteresis of 1°C between activation (for example 17°C) and deactivation (for example 18°C)
   - The delay period for the activation temperature has expired, in this example 24 hours
4. The system will shut off again when conditions are met as described in step 2. above.
5. When the end date of the summer shut-off period is passed, the system turns on again when the turn-on conditions are met, see step 3. above.

Heating without summer shut-off



Heating with summer shut-off



10.3.3 Cooling mode without winter-shut-off

The diagram in the figure below, labelled **Cooling mode without winter shut-off**, illustrates an operation example with the following setup:

- Operating mode is set to cooling, see section 8.9.1 Operating mode (select), page 31
- Winter shut-off is not defined

Period P1: During this period, which covers the full year, the circulation pump is running continuously.

10.3.4 Cooling mode with winter-shut-off

The diagram in the figure below, labelled **Cooling mode with winter shut-off**, illustrates an operation example with the following setup:

- Operating mode is set to cooling, see section 8.9.1 Operating mode (select), page 31
- Winter shut-off is set up for the colder period of the year. See section Winter shut-off, page 29 for instructions on how to define the shut-off period.

Period P1: During this period, which in this example covers the months April to August, the circulation pump is running continuously.

Period P2, winter shut-off: During this period, which in this example covers the months September to March, the following scheme applies:

1. When the period P2 starts, the circulation pump is running continuously.
2. When all conditions for winter shut-off are met, the mixing valve closes and the circulation pump stops.

   Shut-off conditions:

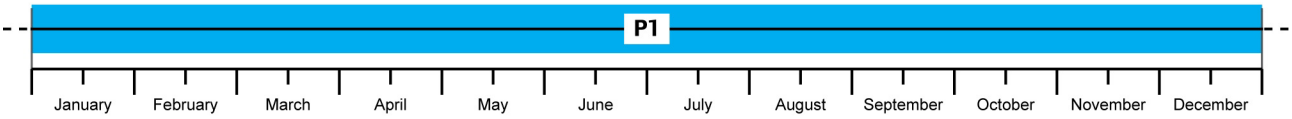
   - The winter shut-off date is passed, for example 1 September.
   - The outdoor temperature has fallen below the cooling deactivation limit, for example 22°C
   - The delay period for the deactivation temperature has expired, for example 24 hours
3. In case there is a brief period with warmer weather during the winter shut-off period, the system automatically turns on again with cooling supplied and circulation pump running.

   Turn-on conditions:

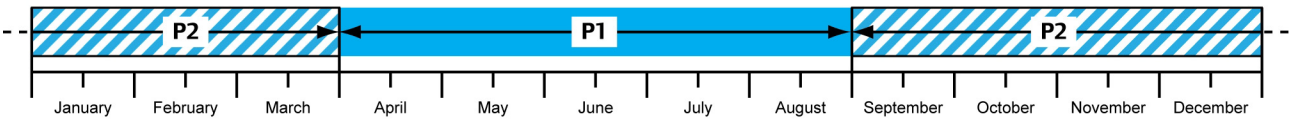
   - The outdoor temperature has risen above the cooling activation limit, in this example 23°C

     Note that the system uses a temperature hysteresis of 1°C between activation (for example 23°C) and deactivation (for example 22°C)
   - The delay period for the activation temperature has expired, in this example 24 hours
4. The system will shut off again when conditions are met as described in step 2. above.
5. When the end date of the winter shut-off period is passed, the system turns on again when the turn-on conditions are met, see step 3. above.

Cooling without winter shut-off



Cooling with winter shut-off



10.3.5 Heating and cooling mode without season shut-offs

The diagram in the figure below, labelled **Heating and cooling mode without season shut-offs**, illustrates an operation example with the following setup:

- Operating mode is set to heating and cooling, see section 8.9.1 Operating mode (select), page 31
- Summer shut-off is not defined
- Winter shut-off is not defined

Period P1: During this period, which covers the full year, the following conditions apply:

- Heating is supplied in heating mode
- Cooling is supplied in cooling mode
- Switching between heating and cooling modes is controlled by the **Heating/cooling switch** function.

  Setting up the Heating/cooling switch is described in section 8.7 H/C switchover, page 30.
- The circulation pump is running continuously

10.3.6 Heating and cooling mode with season shut-offs

The diagram in the figure below, labelled **Heating and cooling mode with season shut-offs**, illustrates an operation example with the following setup:

- Operating mode is set to heating and cooling, see section 8.9.1 Operating mode (select), page 31
- Summer shut-off is set up for the warmer period of the year. See section Summer shut-off, page 26 for instructions on how to define the shut-off period.
- Winter shut-off is set up for the colder period of the year. See section Winter shut-off, page 29 for instructions on how to define the shut-off period.
- Switching between heating and cooling modes during the periods P2 and P4 is controlled by the **Heating/cooling switch** function.

  Setting up the Heating/cooling switch is described in section 8.7 H/C switchover, page 30.

Period P1: During this period, which in this example covers the period 1 October to 15 March, the following conditions apply:

- Heating is supplied
- The circulation pump is running continuously

Period P2: During this period, which in this example covers the period 15 March to 15 April, the following scheme applies:

1. When the period P2 starts, the circulation pump is running continuously.
2. When all conditions for summer shut-off are met, the system enters an automatic standby mode:
   - No heating is supplied
   - No cooling is supplied
   - The circulation pump is stopped
   - Switching between heating and cooling modes is controlled by the **Heating/cooling switch** function
3. In case there is a brief period with either colder or warmer weather during this period, the system automatically turns on again.

   Turn-on conditions to heating mode are explained in section 10.3.2 Heating mode with summer shut-off, page 47.

   Turn-on conditions to cooling mode are explained in section 10.3.4 Cooling mode with winter-shut-off, page 48.

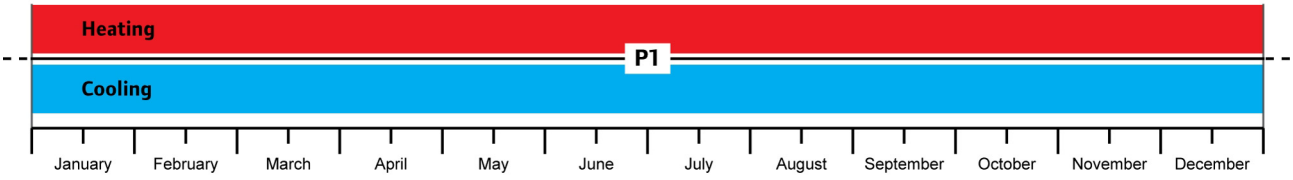
Period P3: During this period, which in this example covers the period 15 April to 1 September, the following conditions apply:

- The system enters a continuous cooling mode
- The circulation pump will run continuously and cooling is supplied.

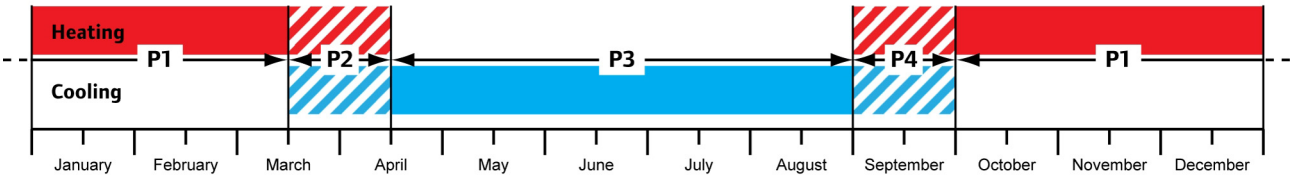
Period P4: During this period, which in this example covers the period 1 September to 1 October, the following scheme applies:

1. When the period P4 starts, the circulation pump is running continuously and cooling is supplied.
2. When all conditions for winter shut-off are met, the system enters an automatic standby mode:
   - No cooling is supplied
   - No heating is supplied
   - The circulation pump is stopped
   - Switching between heating and cooling modes is controlled by the **Heating/cooling switch** function

Heating and cooling mode without season shut-offs



Heating and cooling mode with season shut-offs



3. In case there is a brief period with either warmer or colder weather during this period, the system automatically turns on again.

   Turn-on conditions to cooling mode are explained in section 10.3.4 Cooling mode with winter-shut-off, page 48.

   Turn-on conditions to heating mode are explained in section 10.3.2 Heating mode with summer shut-off, page 47.

11 Trouble shooting

The table below shows problems and alarms that can occur with the Climate Controller C-46 and descibes solutions.

Alarms are indicated by a flashing alarm indicator and a warinig sign on the display.

Problem	Cause	Actions
Alarm: Missing sensor	Sensor not defined in controller	1. Check in quick menu that the sensor is defined. Rerun the installation wizard if the sensor is missing.
	Wired sensor is not correctly connected to controller	1. Check the sensor connection.
	Radio thermostat is not linked	1. Check the link with the View link function. 2. If link is missing, then connect the thermostat with the Add link function.
	Radio thermostat connected through Controller C-56 Radio missing	1. Check the ID of the thermostat in the Zones menu. 2. Check the cable connection between Climate Controller C-46 and Controller C-56 Radio. 3. Check the thermostat linking in Controller C-56 Radio. 4. Check software version of Controller C-56 Radio. It must be version 5.0.3 or
Mixer valve does not open	Actuator is not correctly connected to controller	1. Check the actuator connection.
	Wrong actuator type	1. Thermal actuator: Check that actuator is 24 V DC, NC.
	Motorized actuator is not correctly configurated	1. Check the external power to the actuator. 2. Check that the rotation setting is correct, clockwise or counterclockwise.
	Other problem	1. Check if mixing valve and source are OK by removing the actuator and opening the valve manually. 2. Check all pumps in the system.
Climate Controller C-46 does not connect with Controller C-56 Radio	Old software version in Controller C-56 Radio	1. Update the Controller C-56 Radio software to version 5.0.3 or later.
	Controller C-56 Radio is not correctly connected to Climate Controller C-46	1. Check the connection.
Unreasonable readings from wired sensor	Wrong sensor type connected	1. Check sensor type, only Uponor sensors work with the controller.
The control is erratic and the actuator works too often.	Parameter setting is not ideal	1. Decrease the **Proportional coeff.** parameter, see section 8.9.2 Control response, page 32. 2. If a motorised actuator is used, increase the **Dead zone** parameter, see section 8.6.7 Dehumidifier control, page 29.
The room temperature is adjusted slowly when weather conditions change.	The control system is slow.	1. Increase the **Proportional coeff.** parameter, see section 8.9.2 Control response, page 32.
The last couple of degrees takes a long time to adjust in the room.	Parameter setting is not ideal	1. Decrease the **Integration time** parameter, see section 8.9.2 Control response, page 32. 2. If a motorised actuator is used, decrease the **Dead zone** parameter, see section 8.6.7 Dehumidifier control, page 29.

Problem	Cause	Actions
The control oscillates	Parameter setting is not ideal	1. Decrease both the **Proportional coeff.** and **Integration time** parameters, see section 8.9.2 Control response, page 32. 2. Check the pump. 3. Check the mixer valve and the supply temperature.
The room temperature is too low	The heat curve is not correct	1. Check the parameters T-slope and T-adjustment, see section 10.2 Adjusting the heat curve, page 46.
The screen is blank.	The Climate Controller C-46 has no power	1. Check the fuse. 2. Check the power connection.
The system does not switch between comfort and economy modes as expected.	The clock setting is incorrect after a power failure	1. Correct the clock settings, see section 8.12.2 Clock settings, page 38.
The system does not switch between summer or winter shut-off and normal mode as expected.	The clock setting is incorrect after a power failure	1. Correct the clock settings, see section 8.12.2 Clock settings, page 38.

12 Technical data

Climate Controller C-46	CE marking	
	IP	IP30 (IP: degree of inaccessibility to active parts of the product and degree of water)
	Degree of protection	IK04
	Low voltage tests	EN 60730-1* and EN 60730-2-1**
	EMC (electromagnetic compatibility) tests	EN 60730-1 and EN 301-489-3
	ERM tests (electromagnetic compatibility and radio spectrum matters)	EN 300 220-3
	Home and building electronic systems (HBES)	50090-2-2 Part 2-2: System overview - General technical requirements
	Power	230 V AC +10/-15 %, 50 Hz, wires < 1.5 mm²
	Power consumption	19 W maximum
	Operating temperature	0 °C to +55 °C
	Storage temperature	-20 °C to +70 °C
	Maximum ambient RH (relative humidity)	95 % maximum at 20 °C
	Sensor inputs	Four analog inputs for NTC temperature sensors 2 wires, < 1.5 mm², < 4 m
	General purpose input	Only dry contact 2 wires, < 1.5 mm², < 20 m
	General purpose output	Galvanic isolated dry contact 24 V AC, 1 A maximum Minimum switching capacity: 100 mA, 5 V DC, 2 A circuit breaker recommended 2 wires, < 1.5 mm², < 20 m
	Thermal actuator output	24 V DC ±10%, 300 mA maximum, short circuit protected (one valve only) 2 wires, < 1.5 mm², < 0.75 m
	Motorized valve output	0–10 V DC, short circuit protected 2 wires, < 1.5 mm², < 20 m
	Pump output	Galvanic isolated 230 V AC supplied relay contact 2 wires, < 1.5 mm², < 20 m
	Antenna output	For Uponor antenna
	C-56 connection	Possibility to connect to Controller C-56 Radio system
	Fuse	T 5 A, 5×20 mm B, break capacity 1500 A Protects power supply and pump, Spare fuse in fuse holder
	Reset	0.5 s minimum to reset device
	Display	LCD, 128×64 pixels

Antenna	Power supply	11 V DC ±10% from Climate Controller C-46
	Consumption	less than 1 W
	Radio frequency	868.3 MHz
	Transmitter duty cycle	1 %
	Receiver class	2

**) EN 60730-1 Automatic electrical controls for household and similar use, Part 1: General requirements*

***) EN 60730-2-1 Automatic electrical controls for household and similar use, Part 2-1: Particular requirements for electrical controls for electrical household appliances*

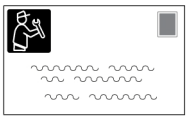
****) EN 60730-2-9 Automatic electrical controls for household and similar use, Part 2-9: Particular requirements for temperature sensing controls*

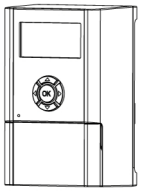
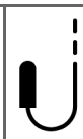
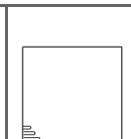
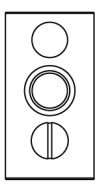
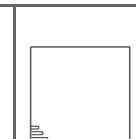
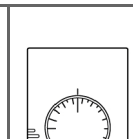
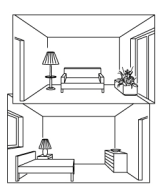
Usable in all Europe CE 0682

Declaration of conformity:

We hereby declare under our own responsibility that products dealt with by these instructions satisfy all essential demands linked to the R&TTE 1999/5/CE Directive dated March 1999.

Installation report



										
Climate Controller C-46	**Sensors**					**Thermostats**			**Rooms**	
	Supply	**Return**	**Outdoor**	**Indoor**	**H-56**	**T-75**	**T-54**	**T-55**		
#1										
Floor sensor										
Mixing valve actuator	**Motorized** ☐			**Controller C-56 Radio**						
	Thermal ☐			**#1** ☐	**#2** ☐	**#3** ☐				
Pump	**Yes** ☐									
	No ☐									

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